KBA-Metronic Aktiengesellschaft

Document issued: March 2008

Manual Tecnico alphaJET C
Compatible con alphajet E
Lista de recambios

Product Manager: Andres Martos © 2011

impryma_bieQ
bienes de equipo para la producción

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alphaJET C - Construction and function

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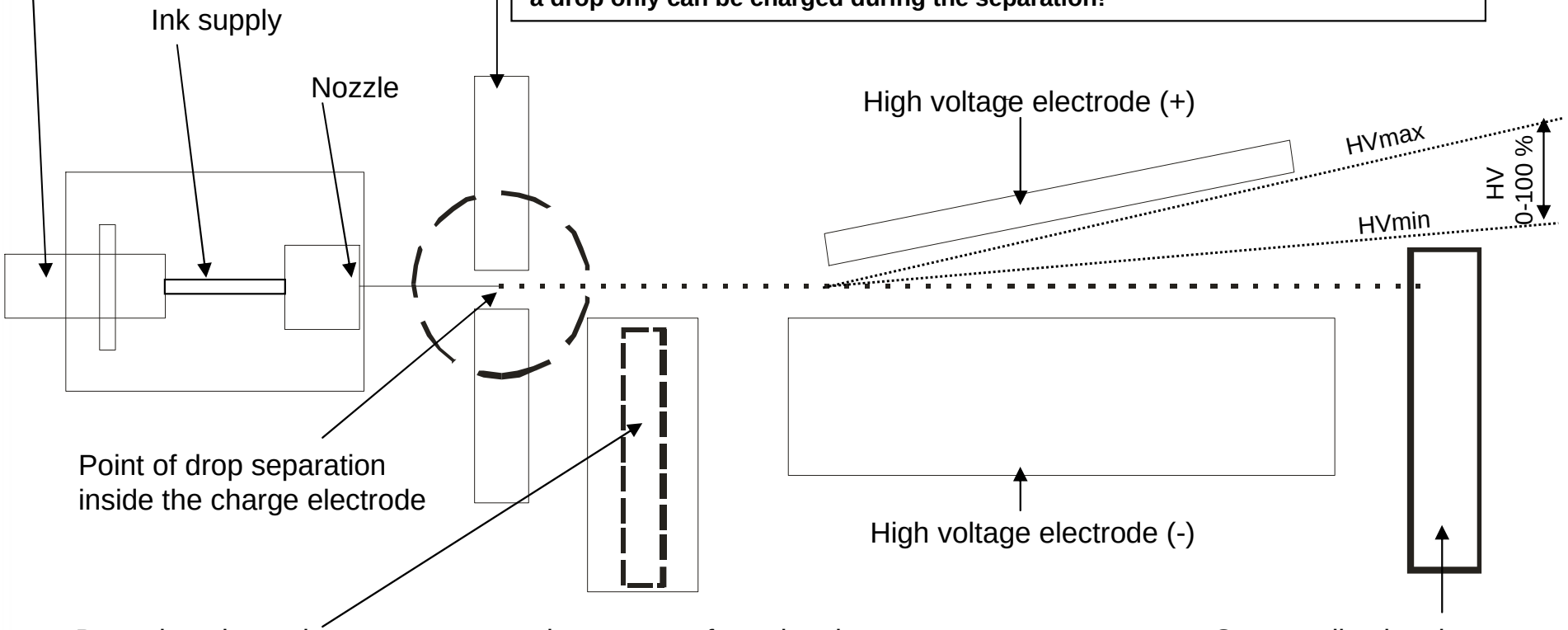
Construction and function

Principle of continuous-inkjet

Ultrasonic transducer: converts the electrical signal into mechanical oscillation.

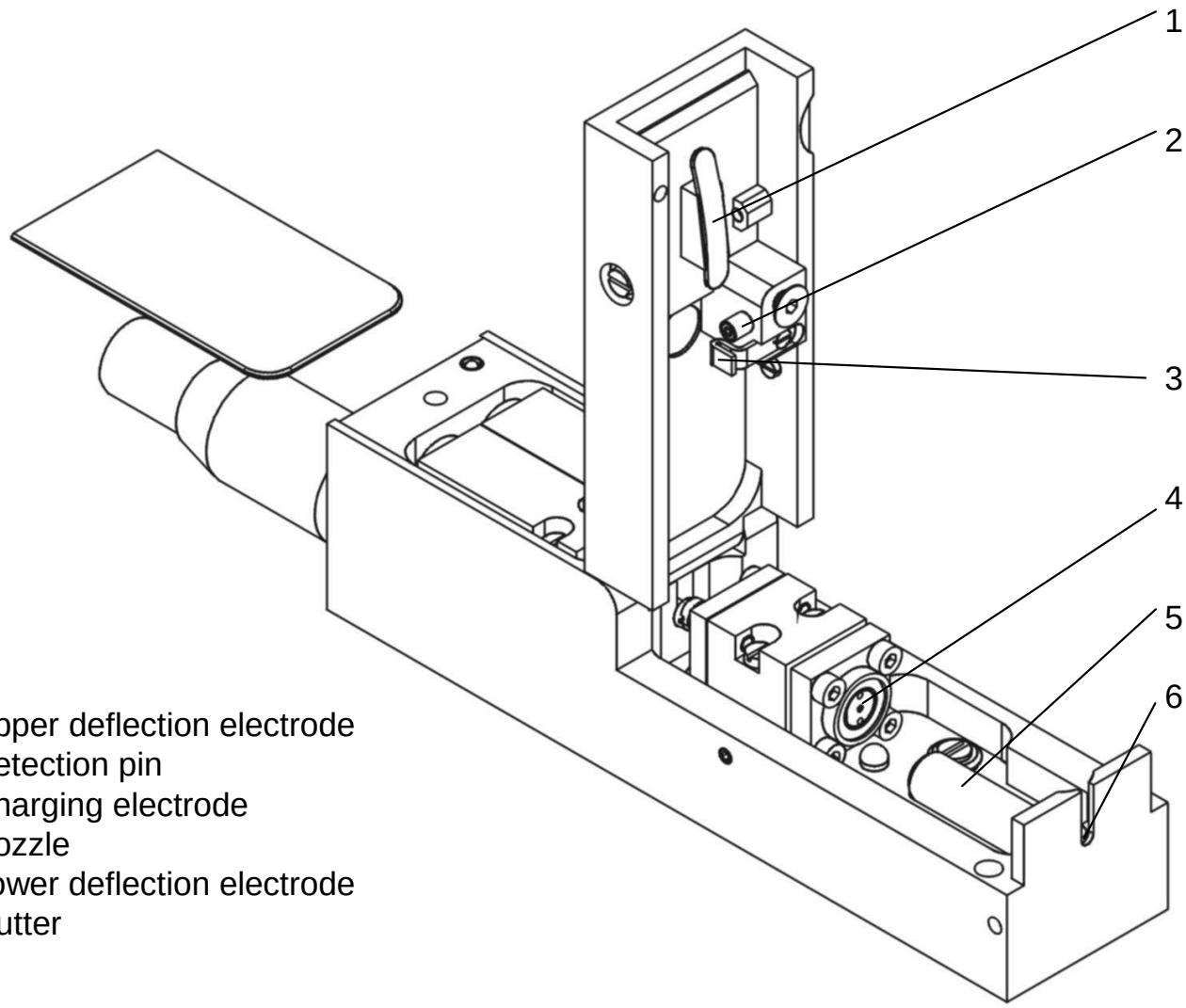
Charge electrode: transmits the charge to the separating ink drops

The separation of the drops must take place within the charge electrode, because a drop only can be charged during the separation!


Ink supply
Nozzle
High voltage electrode (+)
HVmax
HV
0-100 %
HVmin
Point of drop separation inside the charge electrode
High voltage electrode (-)
Detection electrode: measures test charges sent from the charge electrode to calibrate the charge moment
Gutter collecting the unused drops

Construction and function

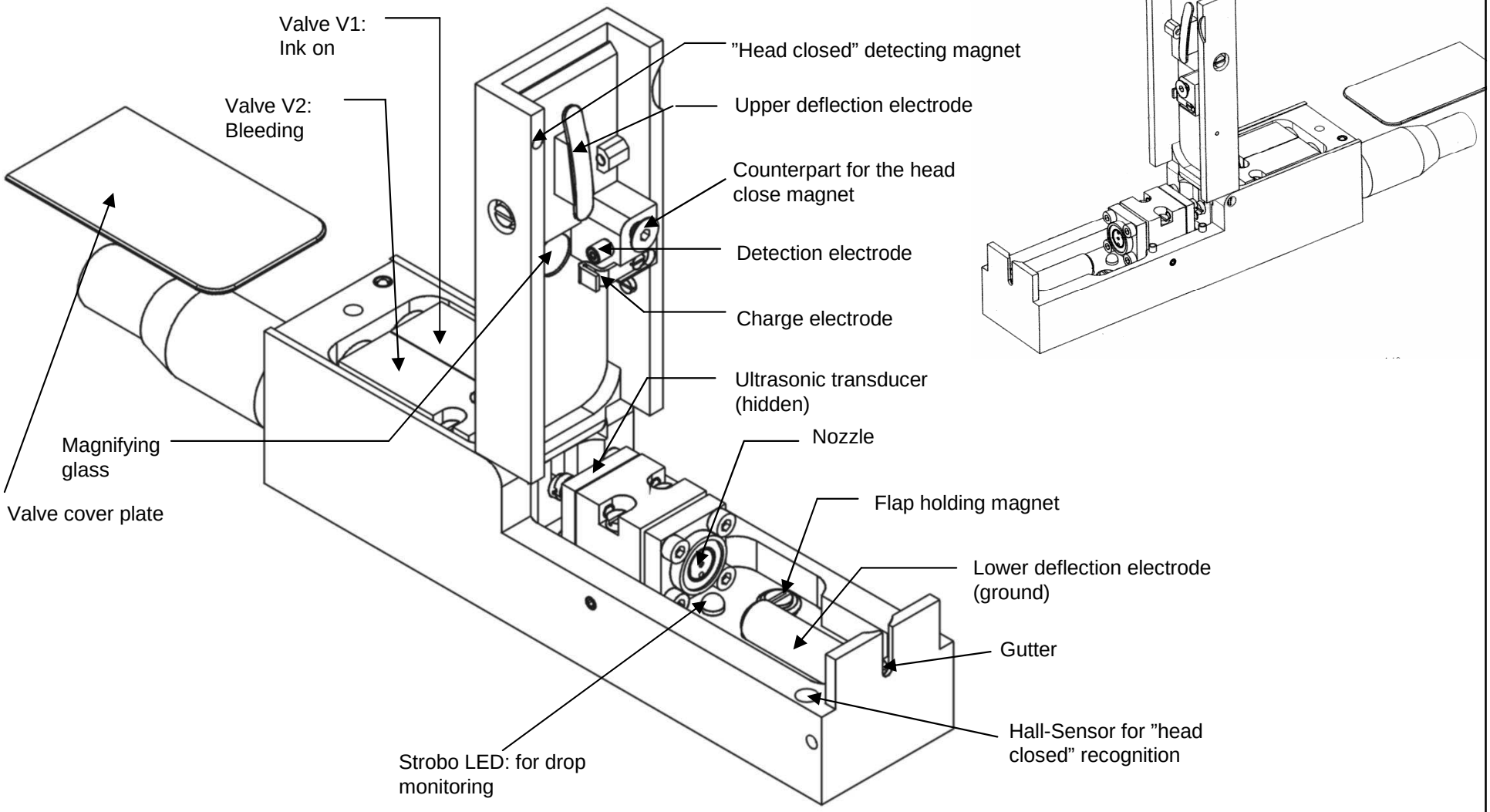
Print head: in general



1 Upper deflection electrode
2 Detection pin
3 Charging electrode
4 Nozzle
5 Lower deflection electrode
6 Gutter

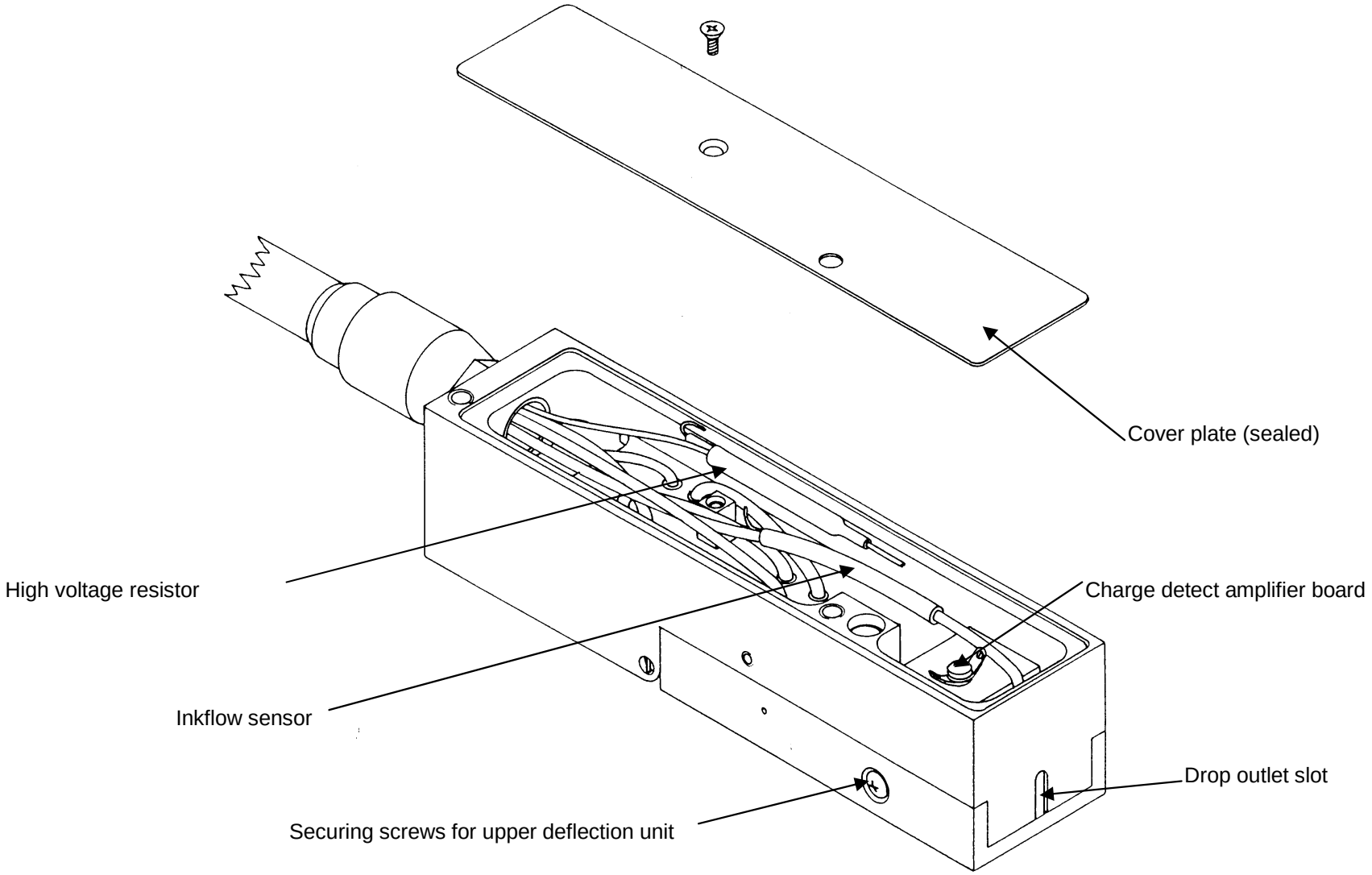
Construction and function

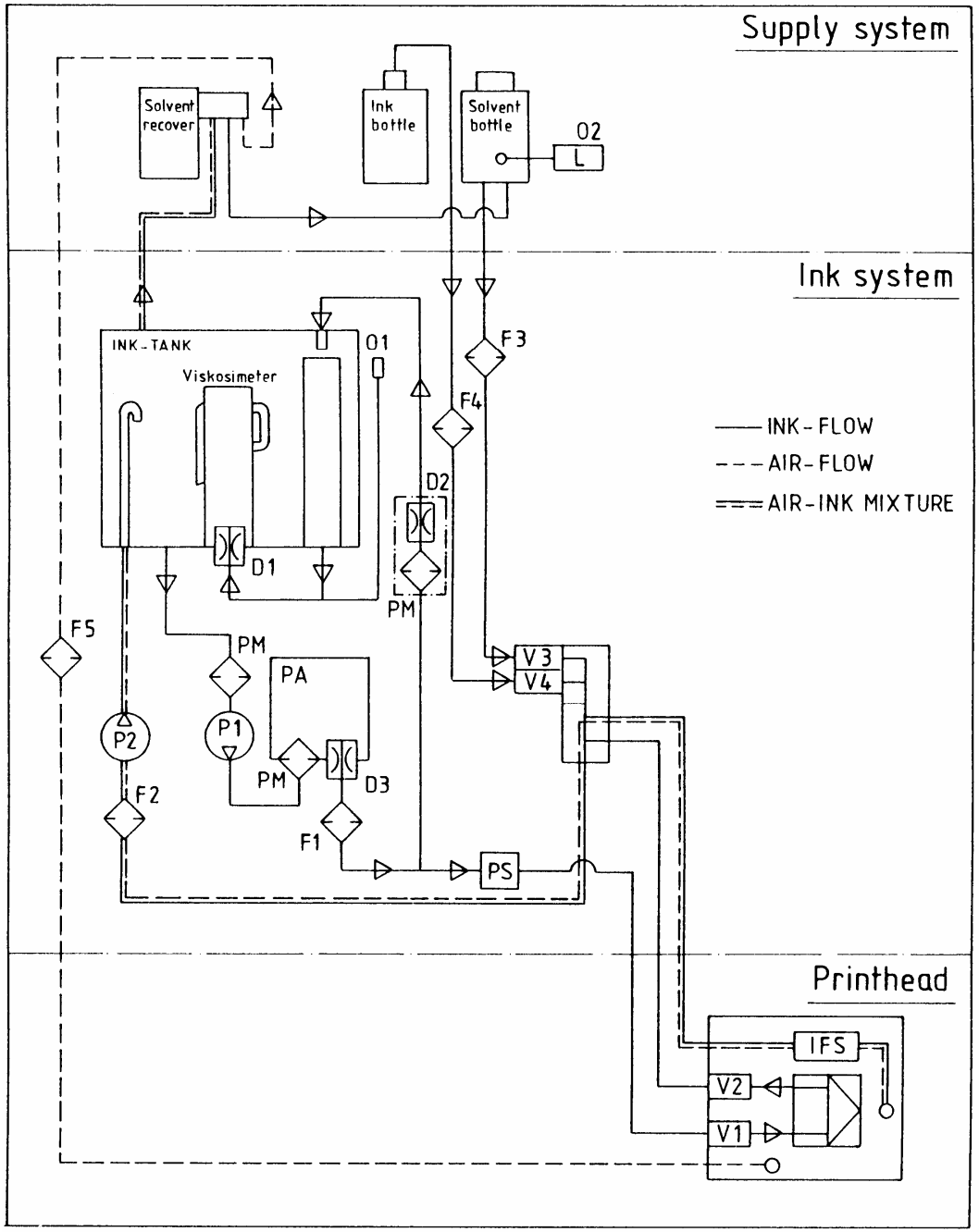
Print-head – front view



Construction and function

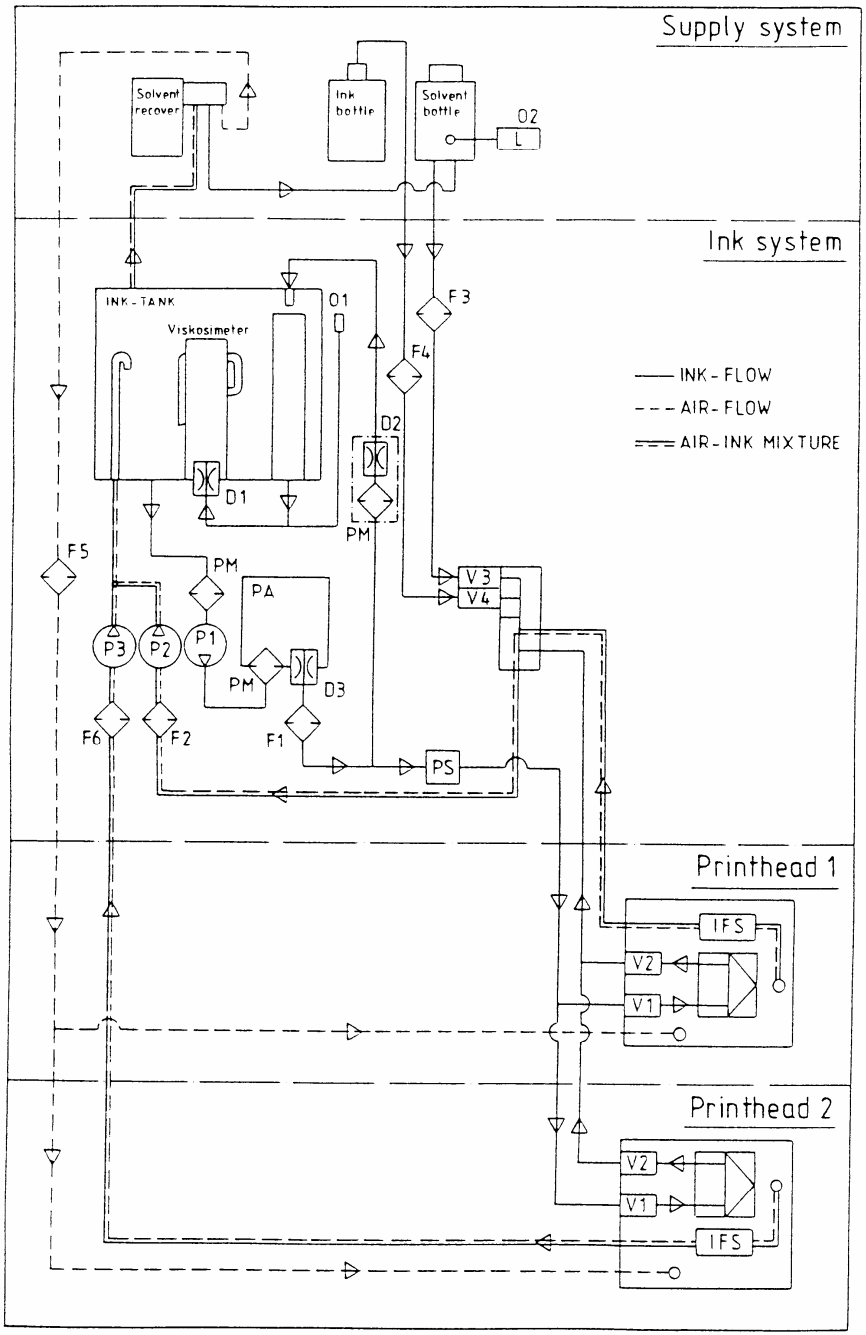
Print-head – rear view with cover plate removed





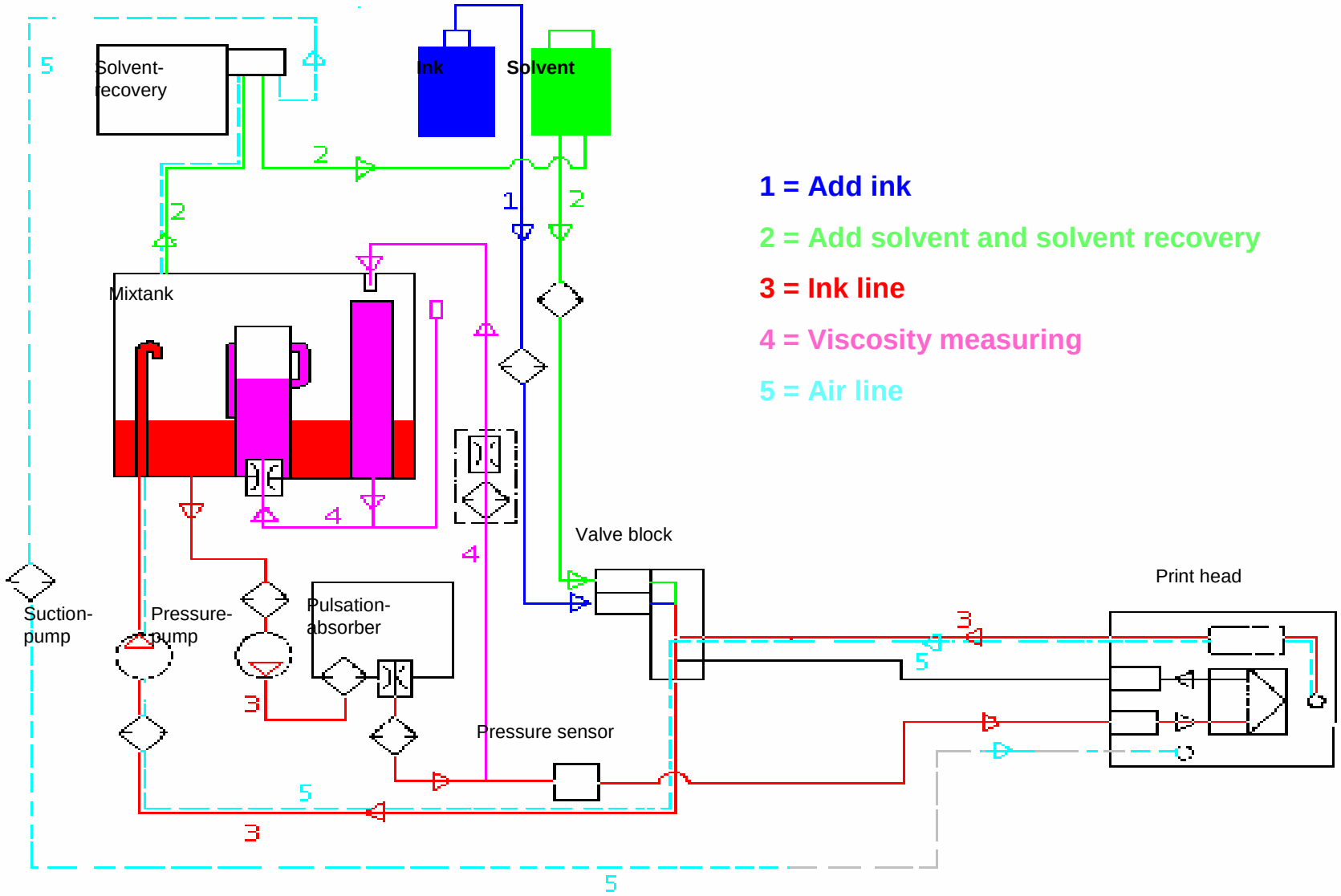
1-head inking system, (schematic presentation)

01 = Outlet tube
02 = Level switch
D1 = Flow restrictor for measuring the viscosity time
D2 = Flow restrictor for limiting the quantity supplied by the pressure pump
D3 = Flow restrictor in the absorber
F1 = Main filter
F2 = Ink return filter
F3 = Filter for valve V3
F4 = Filter for valve V4
F5 = Air filter
IFS = Inkflow sensor
P1 = Pressure pump
P2 = Suction pump
PA = Pulsation absorber
PM = Protection mesh
PS = Pressure sensor
V1 = Ink-on valve
V2 = Bleeding valve
V3 = Solvent-add valve
V4 = Ink-add valve



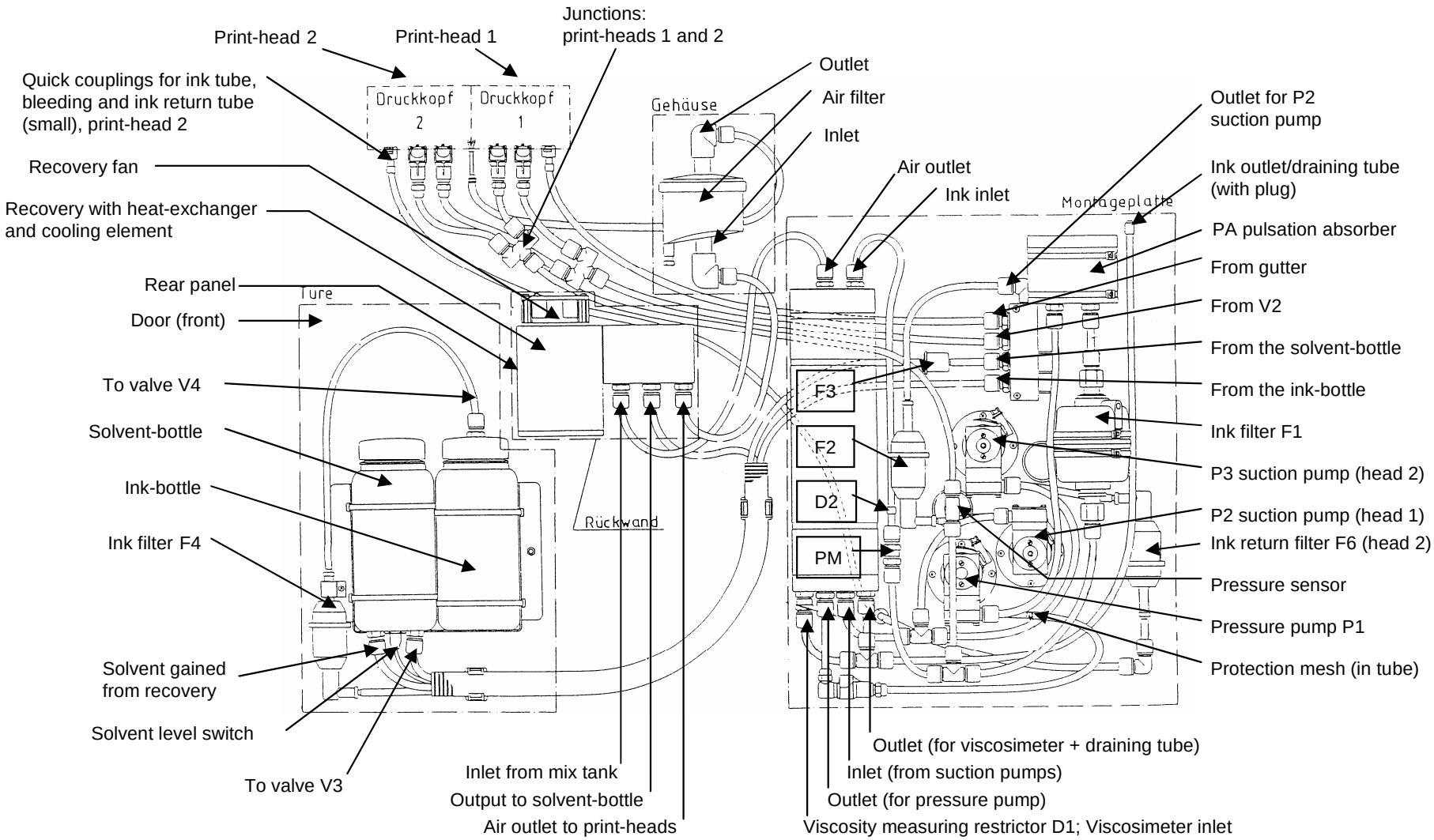
2-head inking system, (schematic presentation)

1-head inking system,(colour schematic presentation)



Construction and function

2-head inking system (realistic presentation)



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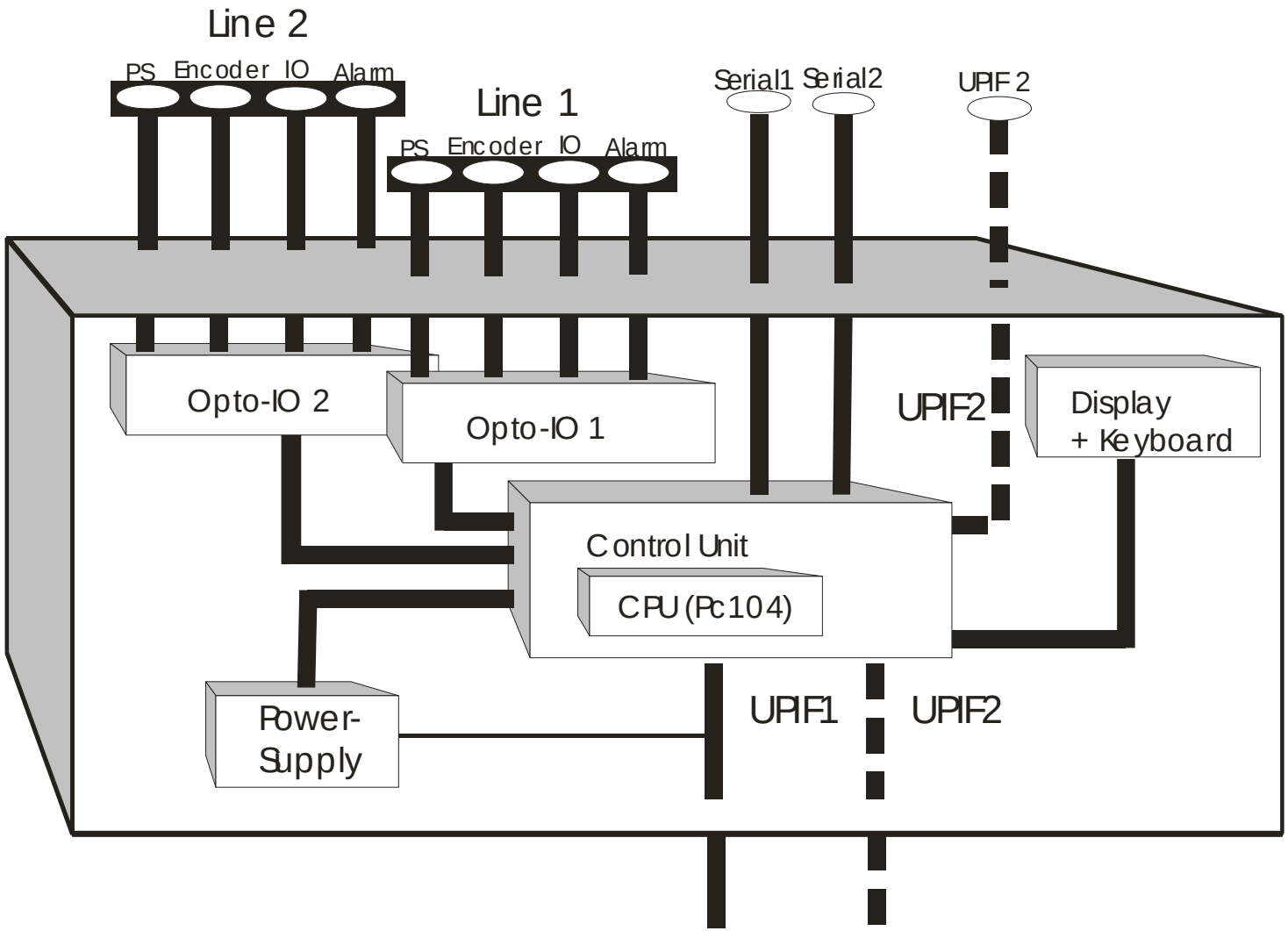
alphaJET C - Electronics

Electronics

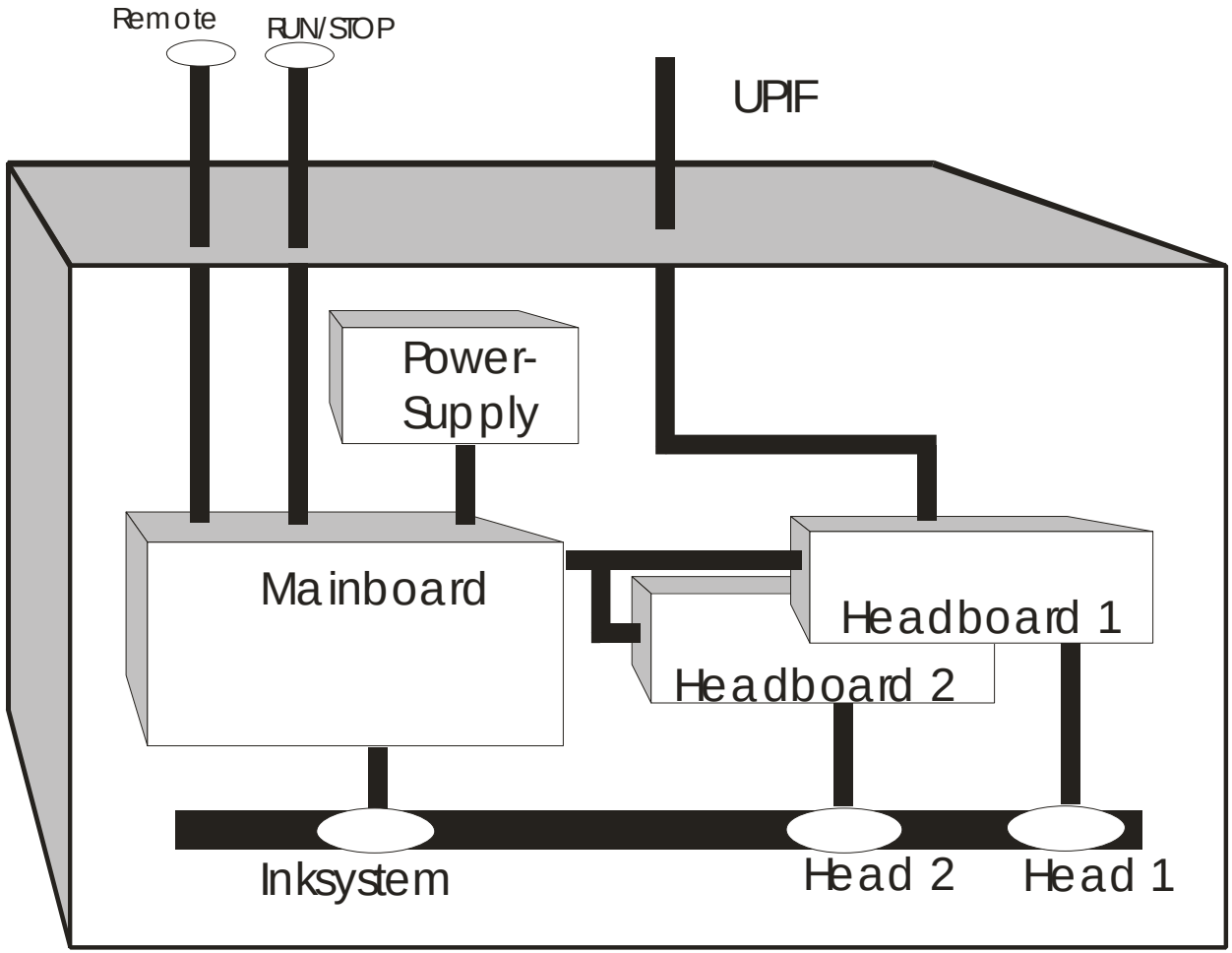
Control unit



UPIF = Universal Printer Interface

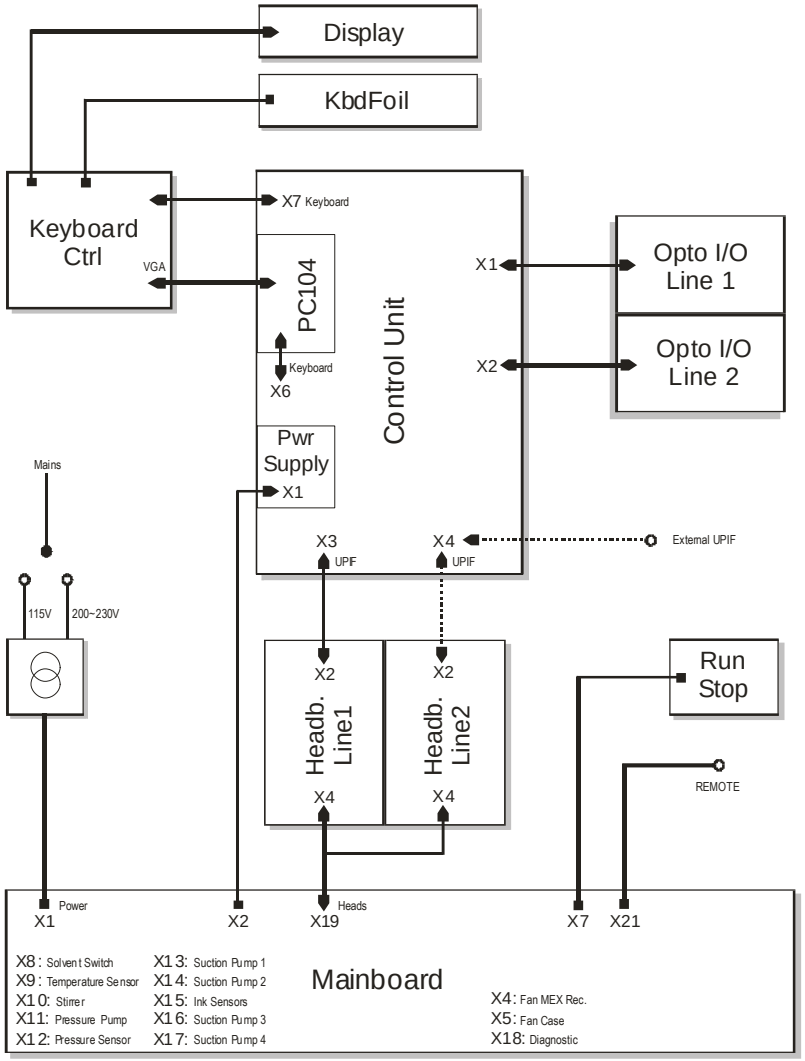
Electronics

Print unit



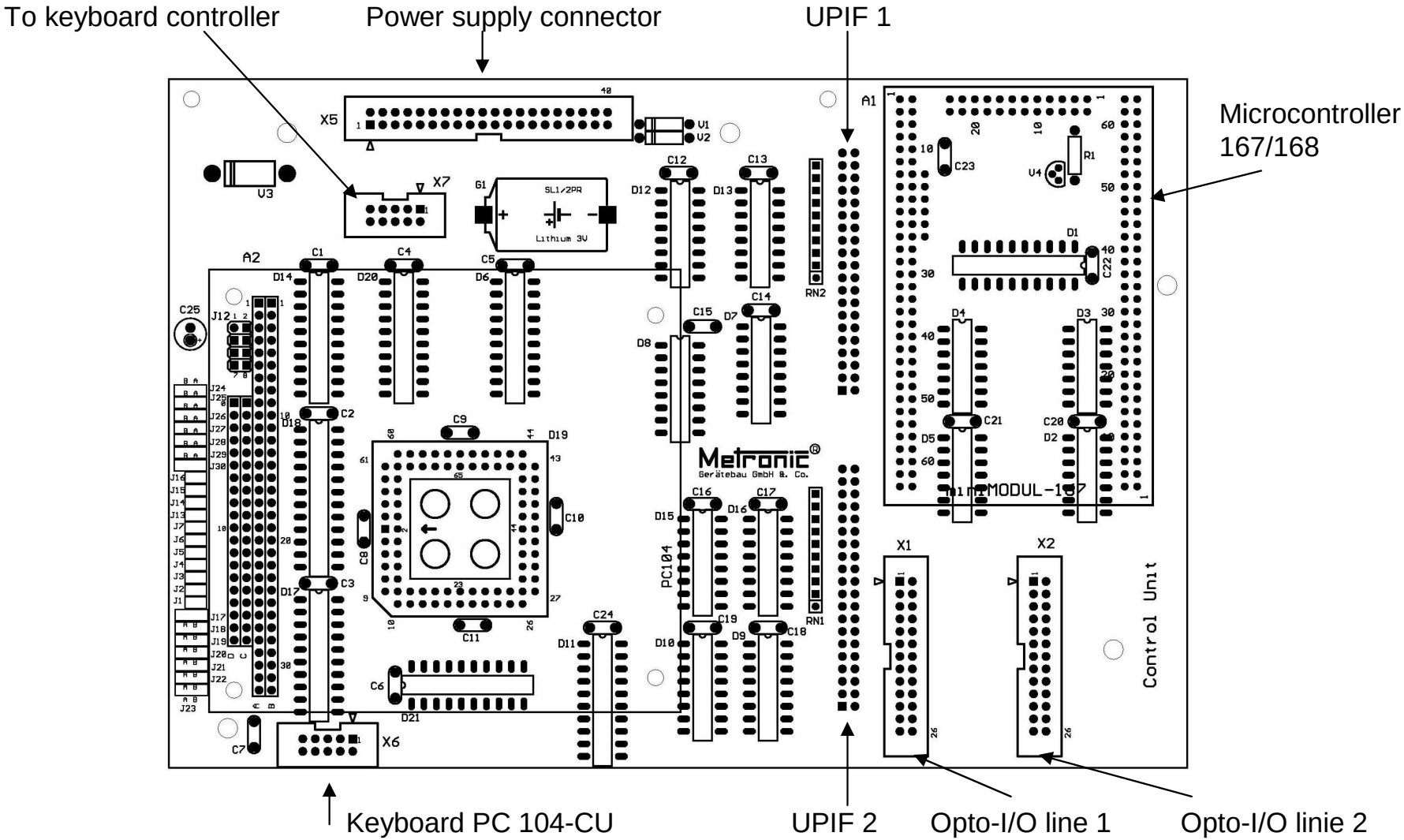
Electronics

Internal connections



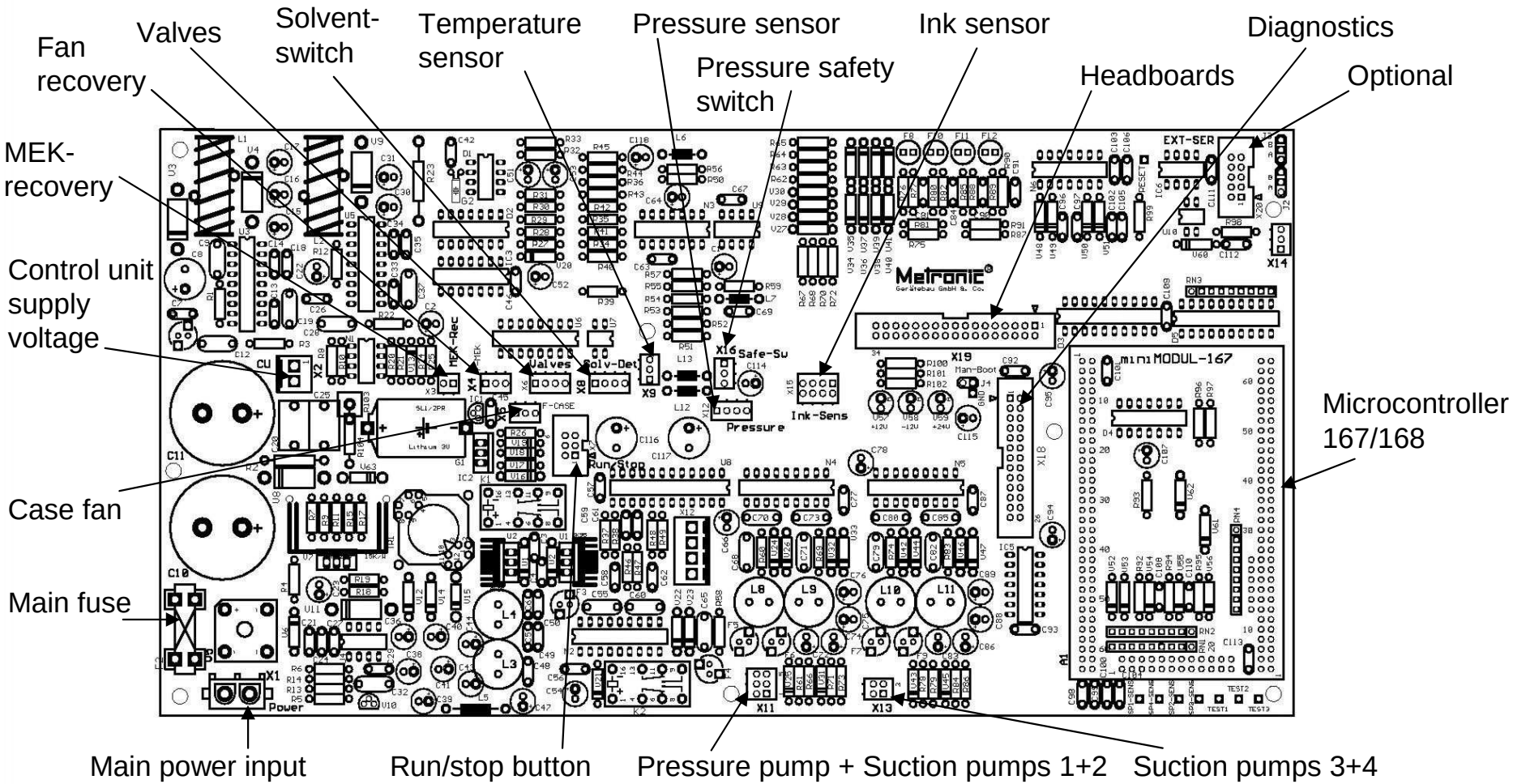
Electronics

Control unit connectors



Electronics

Mainboard connectors



Electronics

Mainboard connectors part 1

X3: MEK - recovery

Pin #3	BK	- Supply element
Pin #2	BN	+ Supply element
Pin #1		

X4: Fan - recovery

Pin #3	BU	GND
Pin #2	WH	Rotation sensor
Pin #1	RD	24V

X5: Fan - case

Pin #3	BU	GND
Pin #2	WH	Rotation sensor
Pin #1	RD	24V

X6: Valves

Pin #4	YE	24V
Pin #3	GN	V4 (Ink)
Pin #2	BN	24V
Pin #1	WH	24V (Solvent)

X8: Solvent switch

Pin #4		
Pin #3		
Pin #2	GN	Switch
Pin #1	WH	Switch

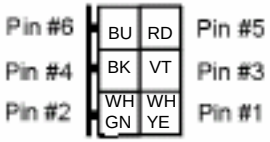
X9: Temperature sensor

Pin #3		
Pin #2	GY	Sensor
Pin #1	GY	Sensor

Electronics

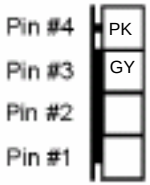
Mainboard connectors part 2

X11: Presure pump, suction pump head 1+2



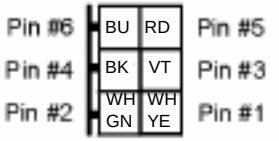
PIN#1,#3,#5: Motor -
PIN#6: Suction pump 2+
PIN#4: Suction pump 1+
PIN#2: Presure pump +

X12: Presure sensor



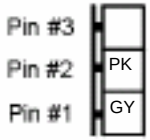
- Presure sensor
+ Presure sensor

X13: Suction pump 3 + 4



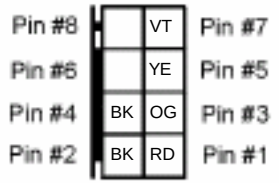
PIN#3,#5: Motor -
PIN#4: Suction pump 3 +
PIN#2: Suction pump 4 +

X14: Remote input



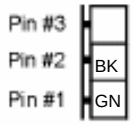
- Signal input
+ Signal input

X15: Ink sensors



PIN#2,#4,#6,#8: GND
PIN#7: Visco up
PIN#5: Visco down
PIN#3: Tank up
PIN#1: Tank down

X16: Safety switch

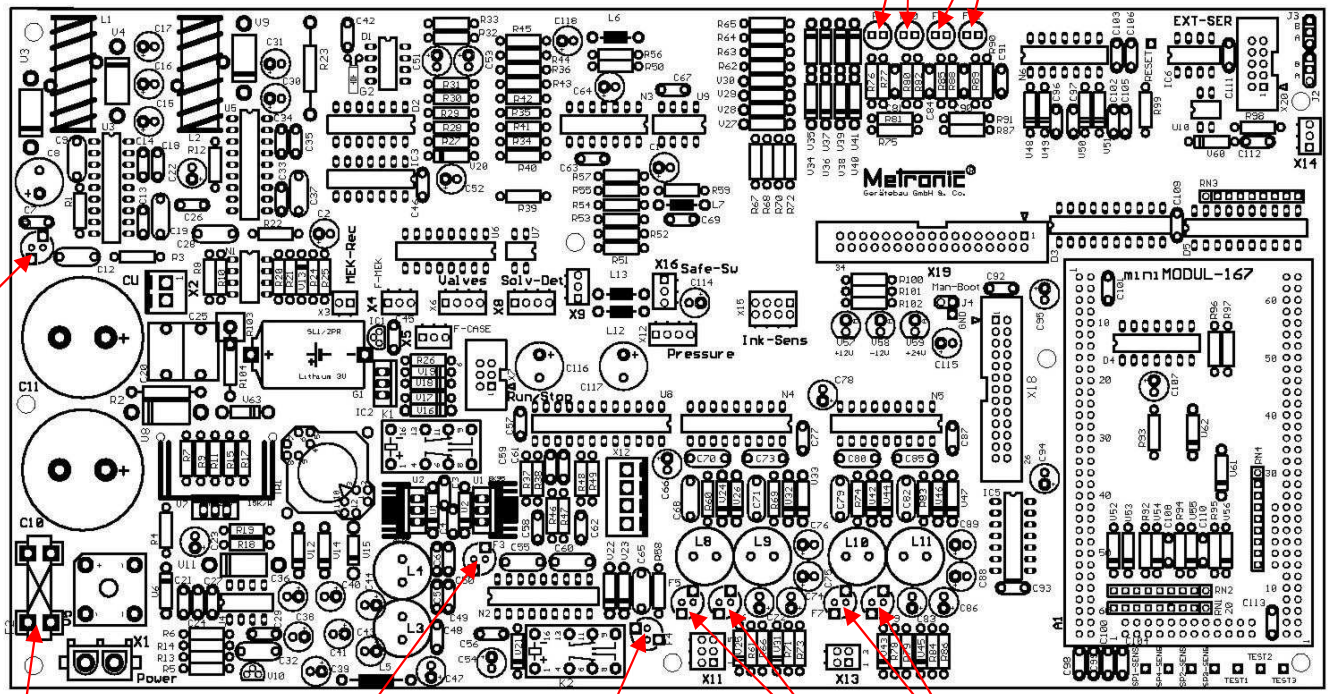


Outside contact
Middle contact

Electronics

Mainboard fuses

F8, F10, F11, F12
50mAF (micro)
Ink sensors
1007.3849



F1
2,5AT
(micro)
5V
1007.3852

F2 - 30 V~ Input from transformator

F3 - Supply Head & Headboard, connected over the Main Controller

F2
5A (Glass)
30V ~
1007.3719

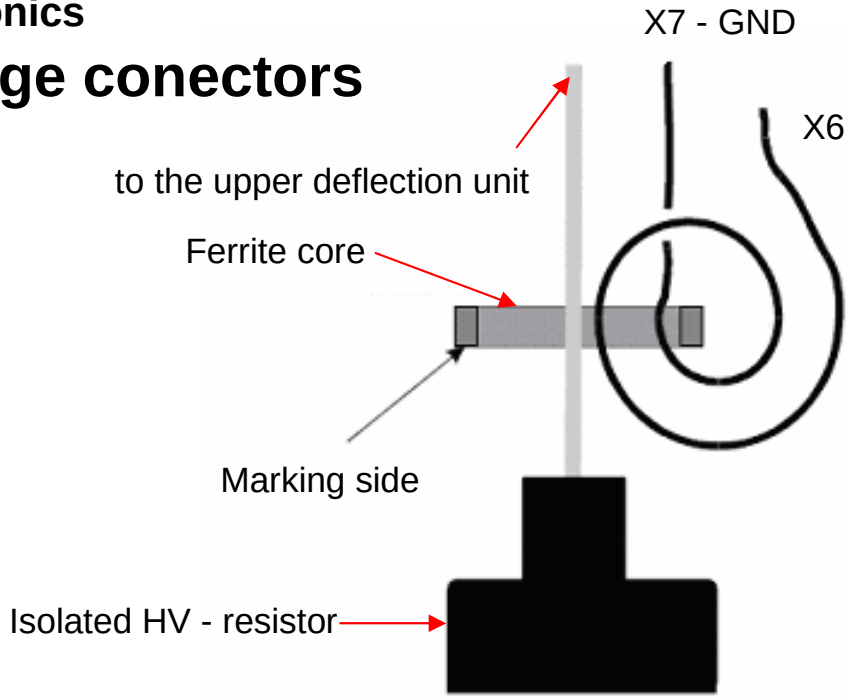
F3
2,5AT (micro)
24V (ext)
1007.3852

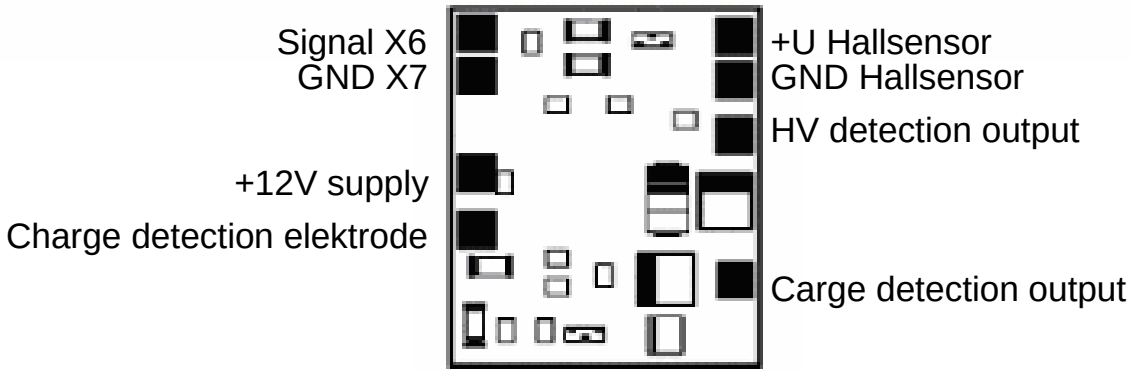
F4
0,9A (Multifuse)
Presurepump
1007.3862

F5, F6, F7, F9
500mAF (micro)
Suction pumps 1-4
1007.3854

Electronics

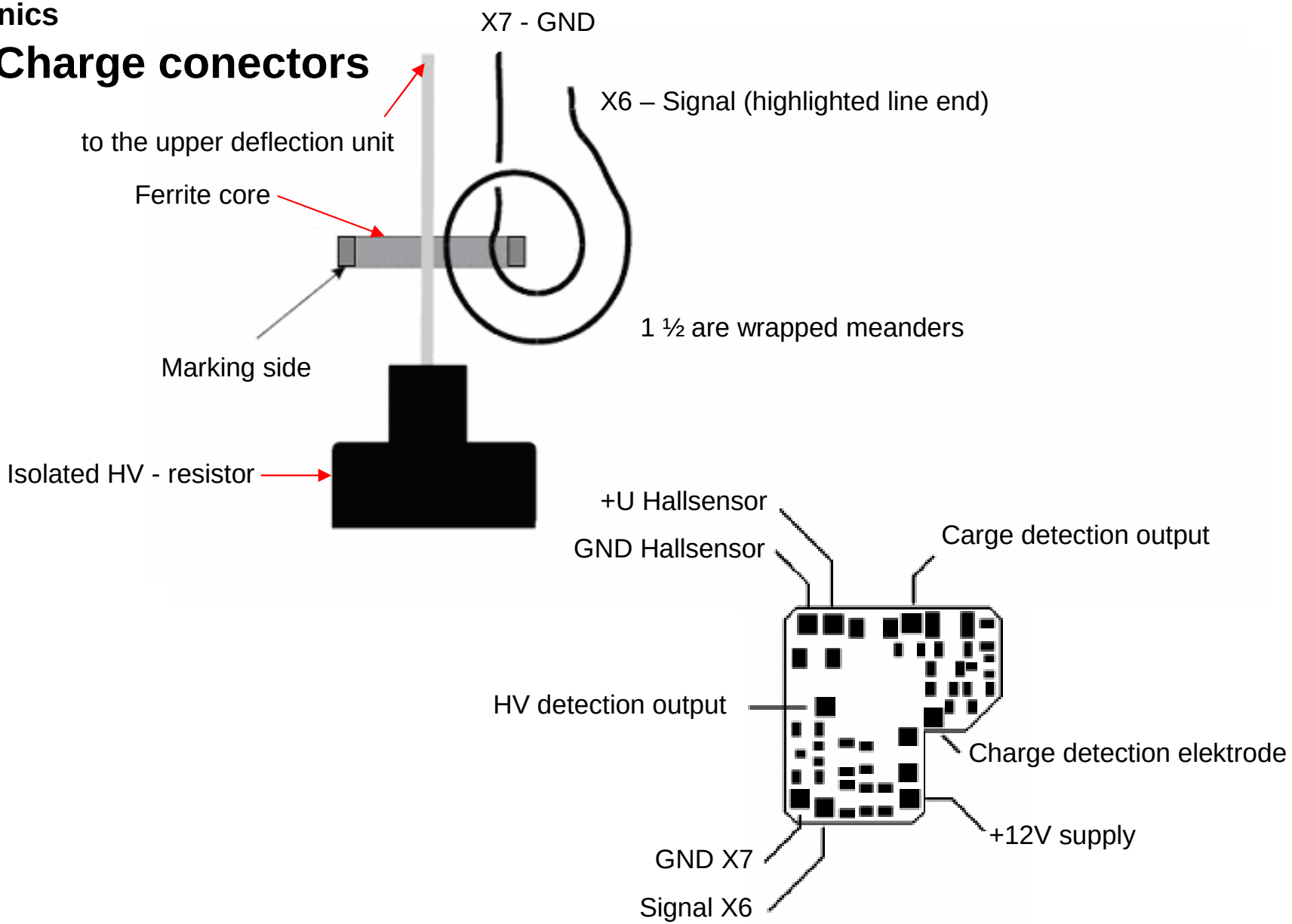
Charge conectors





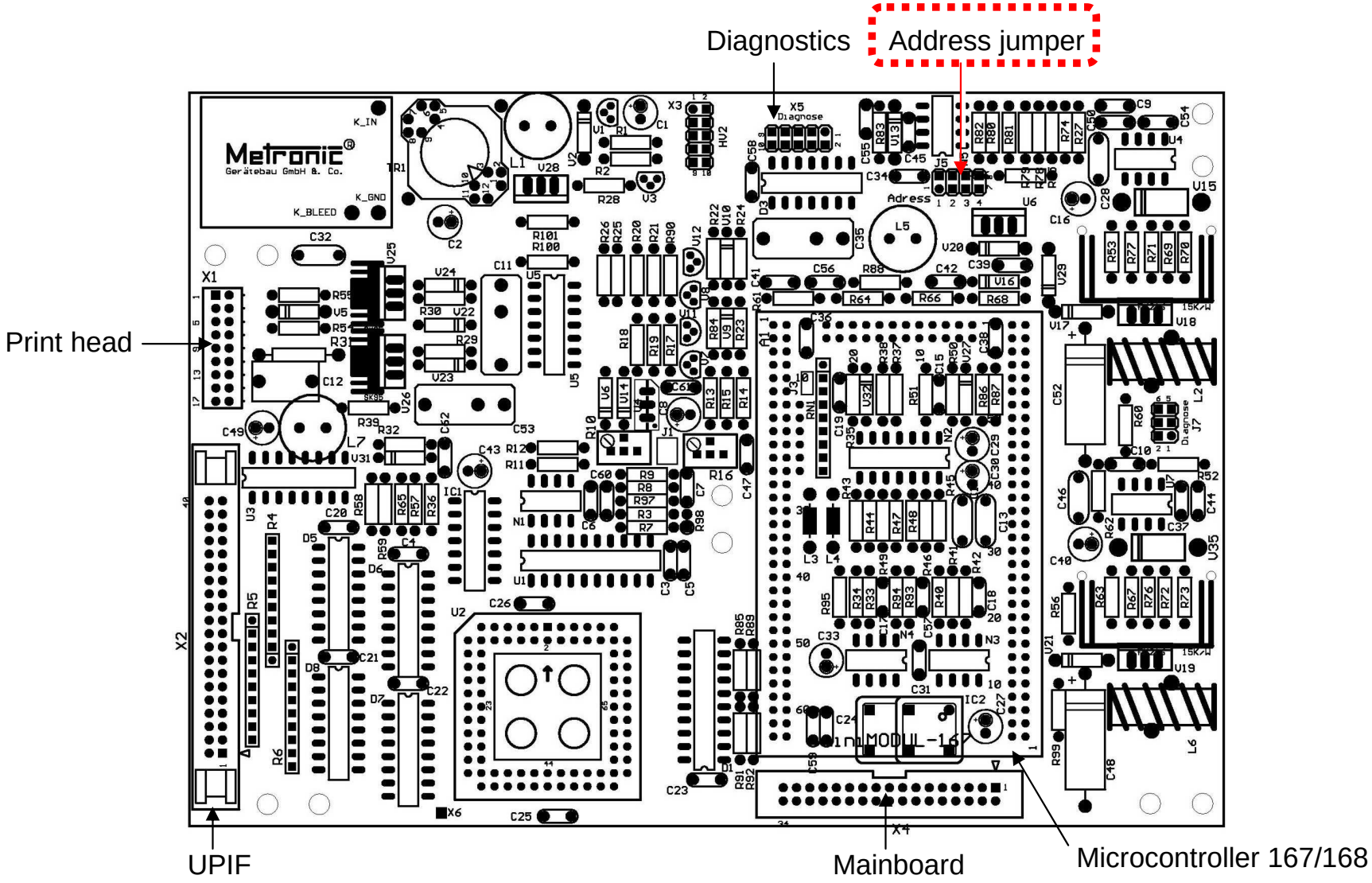
Electronics

HS - Charge conectors



Electronics

Headboard connectors



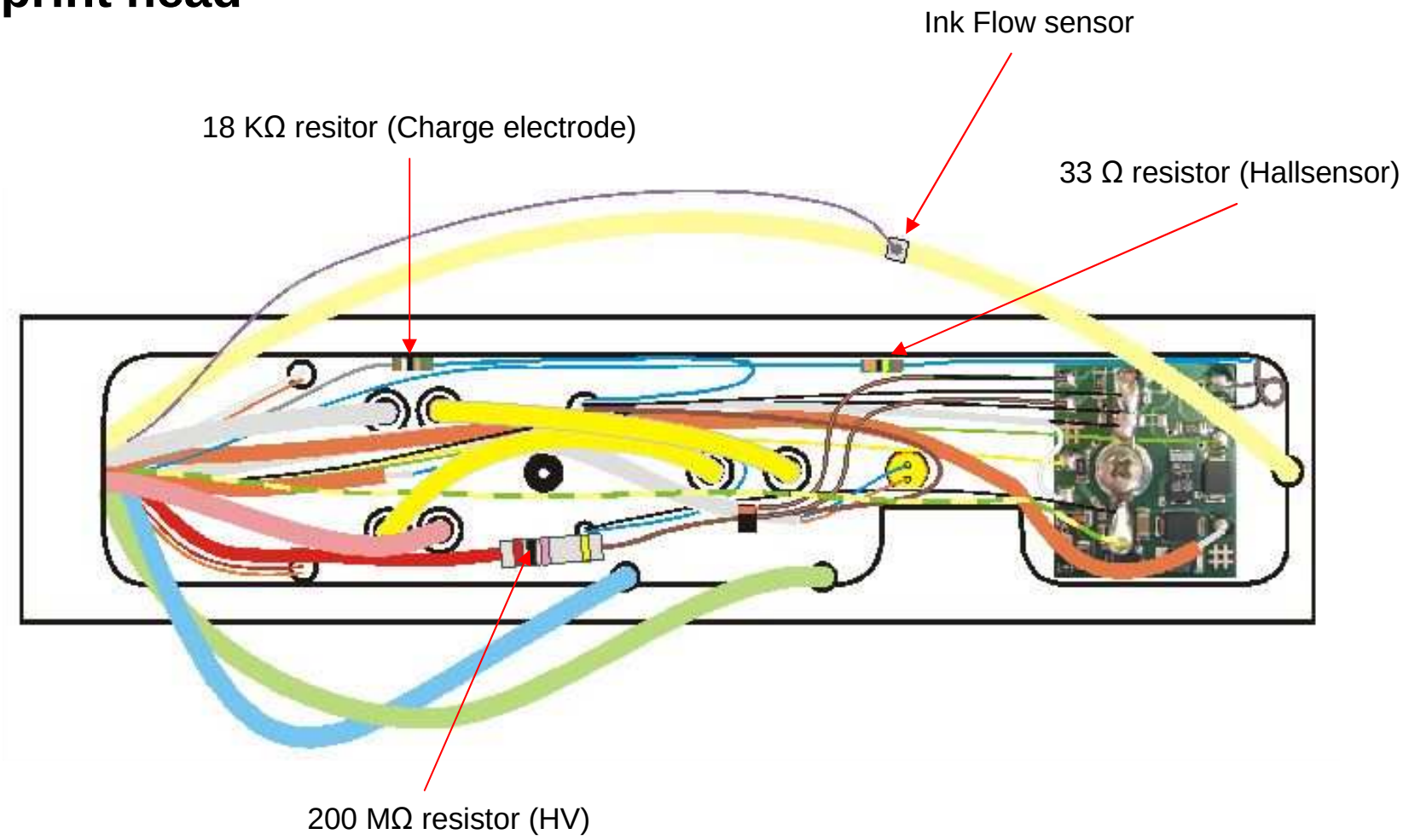
Electronics

Print head socket

Charge voltage	Pin #18	GN		Pin #17	GND
Modulation voltage	Pin #16	⊙	BK	Pin #15	GND
GND	Pin #14	BK	BK	Pin #13	GND
LED +	Pin #12	BU	OG	Pin #11	LED –
V1 (Ink on)	Pin #10	RD	OG	Pin #9	V2 (Bleed)
Charge detection	Pin #8	⊙	BK	Pin #7	GND
Head open	Pin #6	BU	GN	Pin #5	HV detection
+ 24V	Pin #4	WH	YE	Pin #3	+ 12V
+ 24V	Pin #2	BN	VT	Pin #1	Ink flow (Gutter)

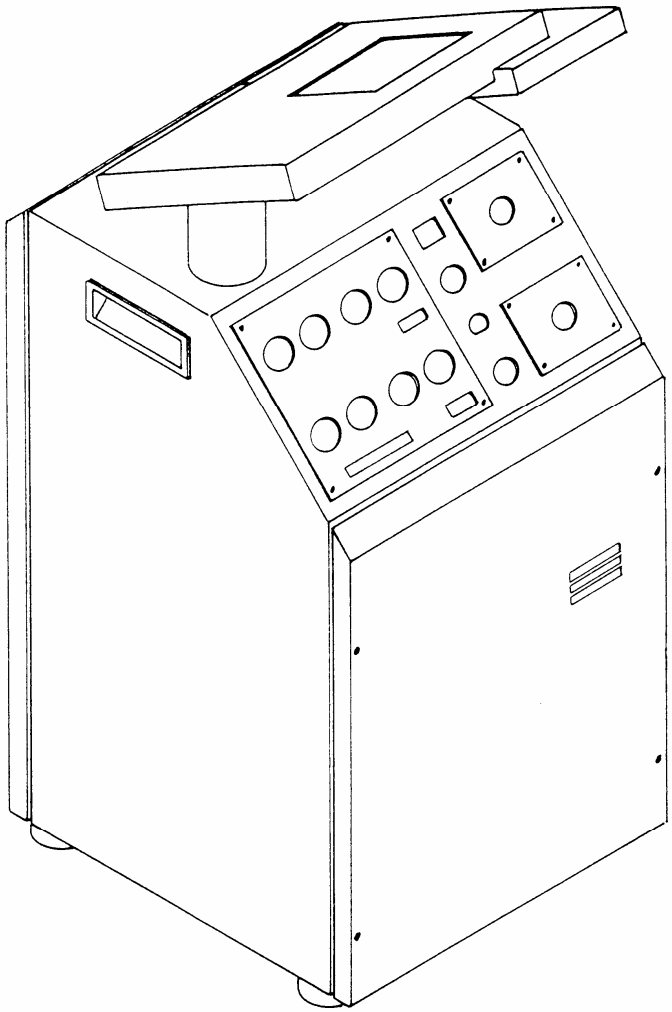
Electronics

Resistors and amplifier in the rear side at the print head



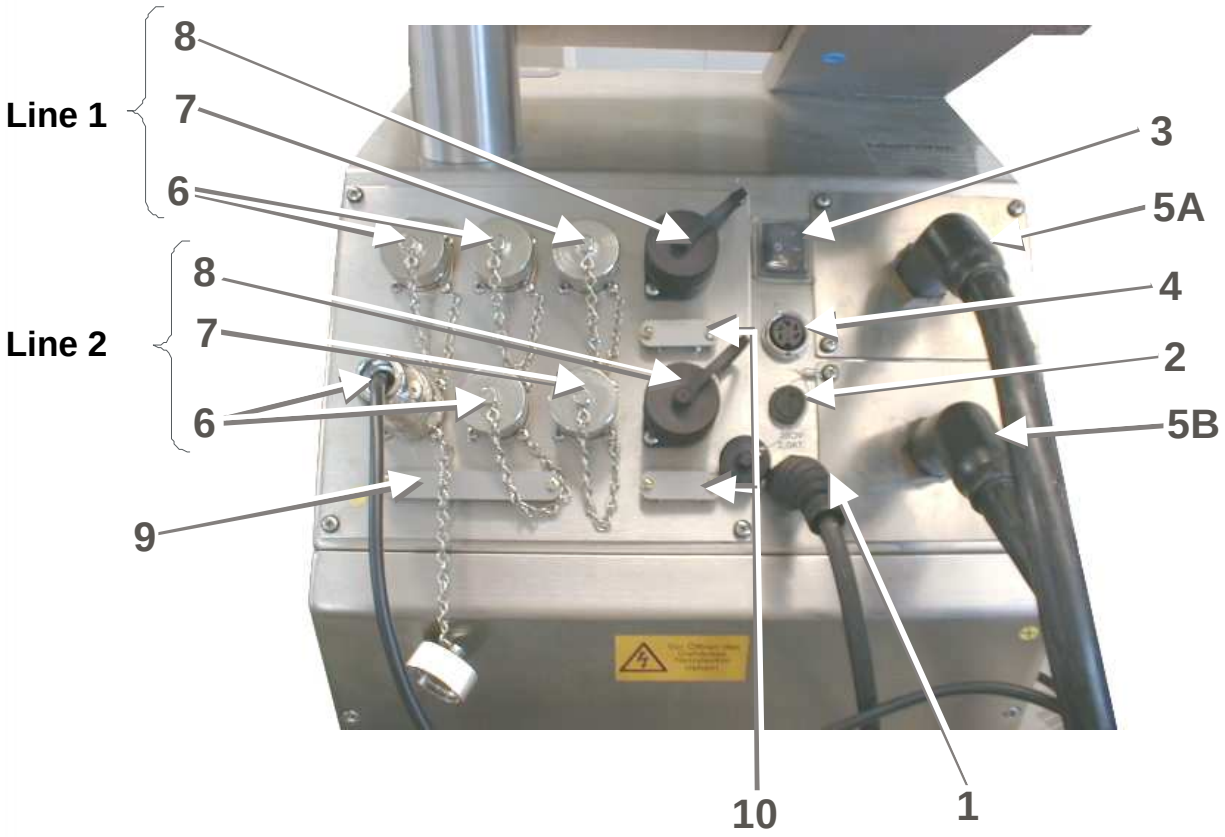
Electronics

Diagram: Rear side with connections



Electronics

External connections (overview)



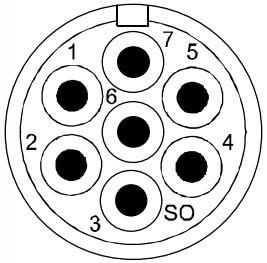
Assignments:

1: Main supply
2: Main fuse
3: Main switch
4: Remote socket
5A: Print head A connection
5B: Print head B connection
6: Product sensor / encoder
7: Input & output options
8: Alarm-outputs (voltage free)
9: Optional interface (UPIF)
10: RS 232 serial port connector

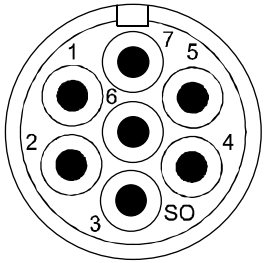
Electronics

External connections (in detail)

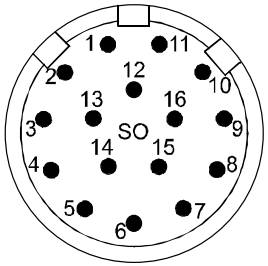
In the ***alphaJET-C*** there are **two connection sockets wired in parallel** available for connecting the product sensors and the encoders. It does not matter to which of the two sockets the product sensor or the encoder is connected. It is therefore also possible to feed through the signals from one ***alphaJET-C*** into the next one (pay attention to the driver capacity of the sensors). The operation of the remote socket is equivalent to the RUN/STOP button on the front side of the ***alphaJET-C***.



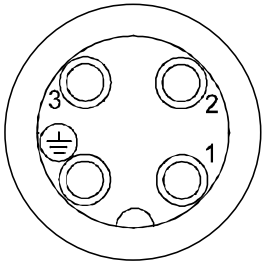
Product sensor- / encoder-socket



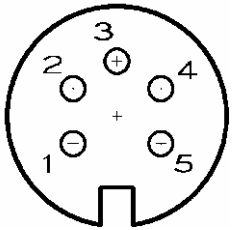
Product sensor- / encoder-socket



Optional signal inputs and outputs



Alarm output



Remote socket

1	GND Int.
2	GND Ext.
3	Encoder track A (speed)
4	+ UB Ext. (max. 30 VDC)
5	+ UB Int. (approx. 24 VDC)
6	Input Product Sensor
7	Encoder track B (direction)
Housing	Shield

The special input circuit of the machine requires that the sensor signal of a product sensor with push-pull output stage (see the latter's data sheet) must be connected to the input of the product sensor via a diode (e.g. 1N4148).

Also the signal for an optional input, which is supplied by an output with push-pull output stage, must be connected to the input via a diode.

1	GND Ext. (Outputs)
2	GND Int.
3	GND Ext. (Inputs)
4	Output 0: Line is printing
5	Input 0: **Reset distance (DMS)*
6	Output 1: Ink or solvent empty
7	Input 1: Reset print mark divider
8	Output 2: Print ready
9	VCC Ext. (Inputs)
10	VCC Int.
11	VCC Ext. (Outputs)
12	Input 2: **Reset overprint suppressor (OPS)*
13	Input 3: Reset product counter
14	Input 4: ExtText - ext. text selection (bit 0); Textlist - Reset text list
15	Input 5: ExtText - ext. text selection (bit 1); Textlist - Reset text list with print cancellation
16	Input 6: ExtText - ext. text selection (bit 2)
Housing	Shield

1	NC (opening contact)
2	C (centre contact)
3	NO (closing contact)
4	PE

1	-IN
2	+IN

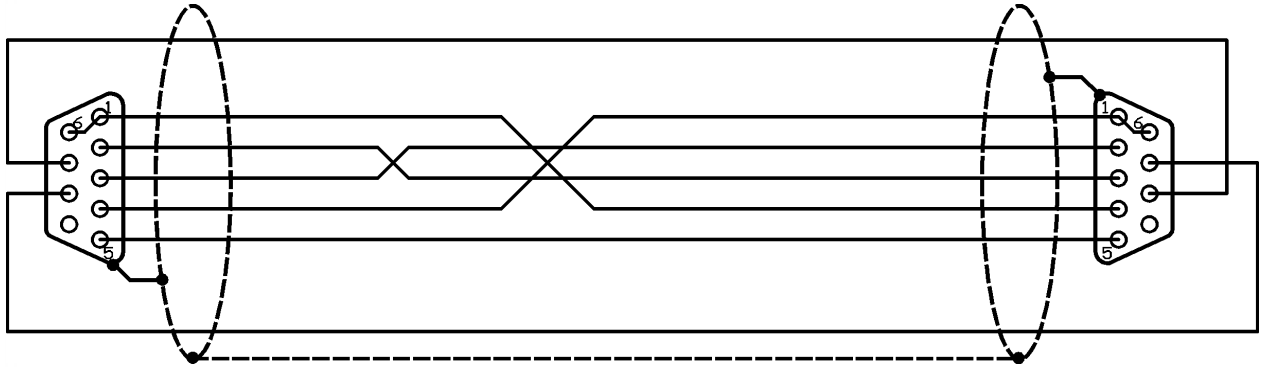
**In italics = not standard*

Electronics

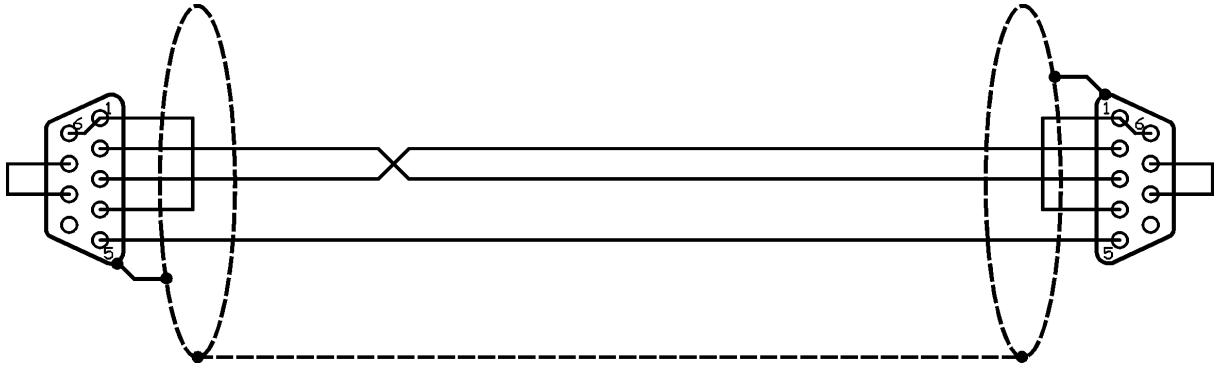
Serial Interface

For the data connection from alphaJET to alphaJET as well as from alphaJET to PC or to other controls the serial interface is used. The connecting cable has to be a so-called serial link cable (null modem cable).

Configuration of a cable for the connection from **alphaJET to alphaJET** as well as from **alphaJET to PC**:



Configuration of a cable for the connection from **alphaJET to other controls** (e. g. PLC):



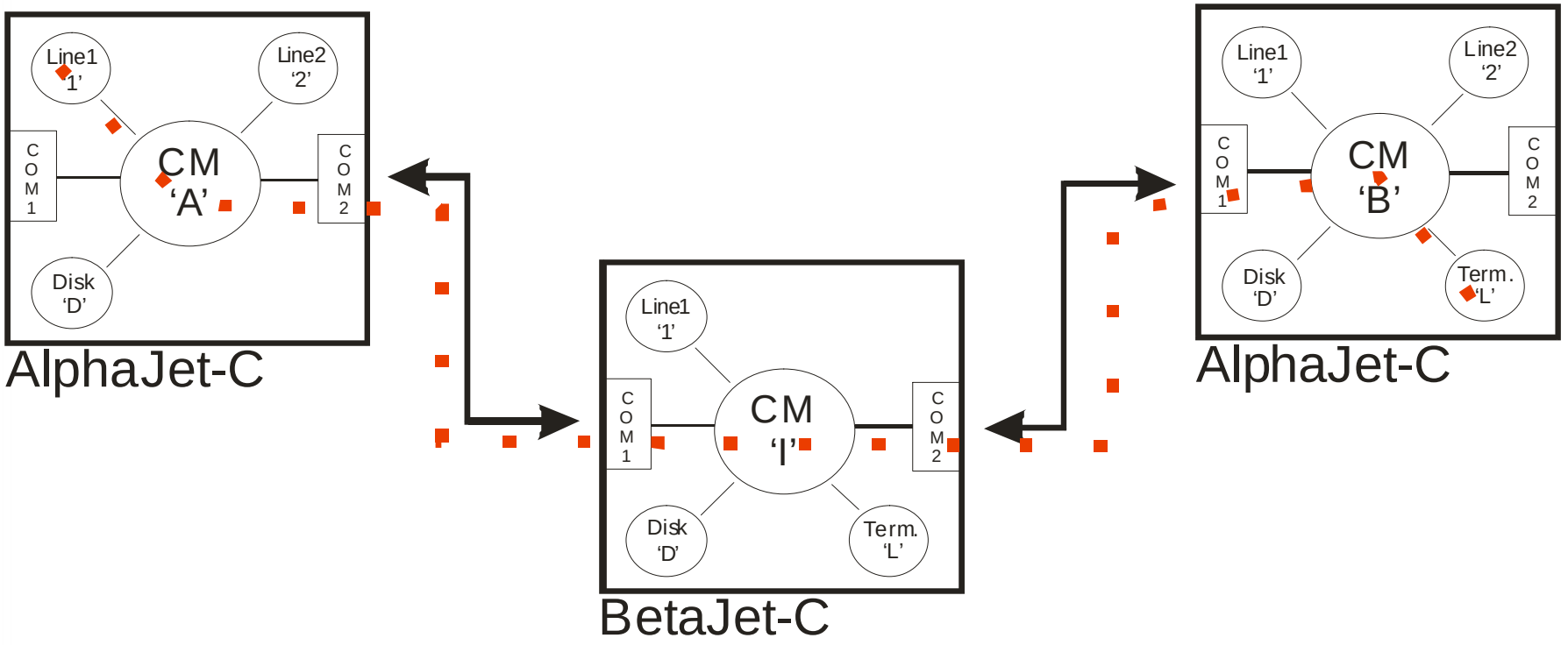
Background:
While the alphaJET sets the pin RTS (# 7) to high, the alphaJET reads in the pin CTS (# 8).
If the signal CTS is high, the alphaJET uses the selected interface configuration (in the menu: System/Serial).
If the signal CTS is low, the alphaJET automatically switches the interface parameters to the ”panic mode” (19200,8,E,1).

While the alphaJET sets the pin DTR (# 4) to high, the alphaJET reads in the pin DSR (# 6).
If the signal DSR is high, the settings in the menu System/Serial are used with activated ”CU”, which means that commands are sent to all connected devices.
If the signal DSR is low, ”CU” is not activated and ”commands-to-all” are suppressed.

Pin 1: DCD
Pin 2: RxD
Pin 3: TxD
Pin 4: DTR (Output)
Pin 5: GND
Pin 6: DSR (Input)
Pin 7: RTS (Output)
Pin 8: CTS (Input)

Electronics

Data transfer



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alphaJET C - Controller 168

Controller

Features of controllers

Main controller:	Data get stored in the main controller such as adjusted pump voltage of the suction and the pressure pump as well as ink type and so on.
CU controller:	Data get stored in the cu controller such as all configuration and text files and all setup attitudes!
Head controller:	Data get stored in the head controller such as adjusted print mode, actually loaded text, high voltage value, load up value data and so on.

Controller

Download module “Controller 168”

These listed orders are needed if a not programmed controller get installed in the system of the AJC system.

With this orders you can individually program the controller separate.

call	Declaration
DSP 1 1	With this order the controller is programmed by the head 1 on the headboard!
DSP 1 2	With this order the controller is programmed by the head 2 on the headboard!
DSP 1 3	With this order the controller is programmed by the head 3 on the headboard!
DSP 1 4	With this order the controller is programmed by the head 4 on the headboard!
MC 1 0	With this order the controller is programmed on the main board!
CU167 1 1	With this order the controller is programmed on the 1st head board(head 1)!
CU167 1 2	With this order the controller is programmed on the 2st head board(head 2)!

Printing speeds

impryma_bieQ
bienes de equipo para la producción

The following printing speeds are possible for a machine with a **55 µm nozzle**:

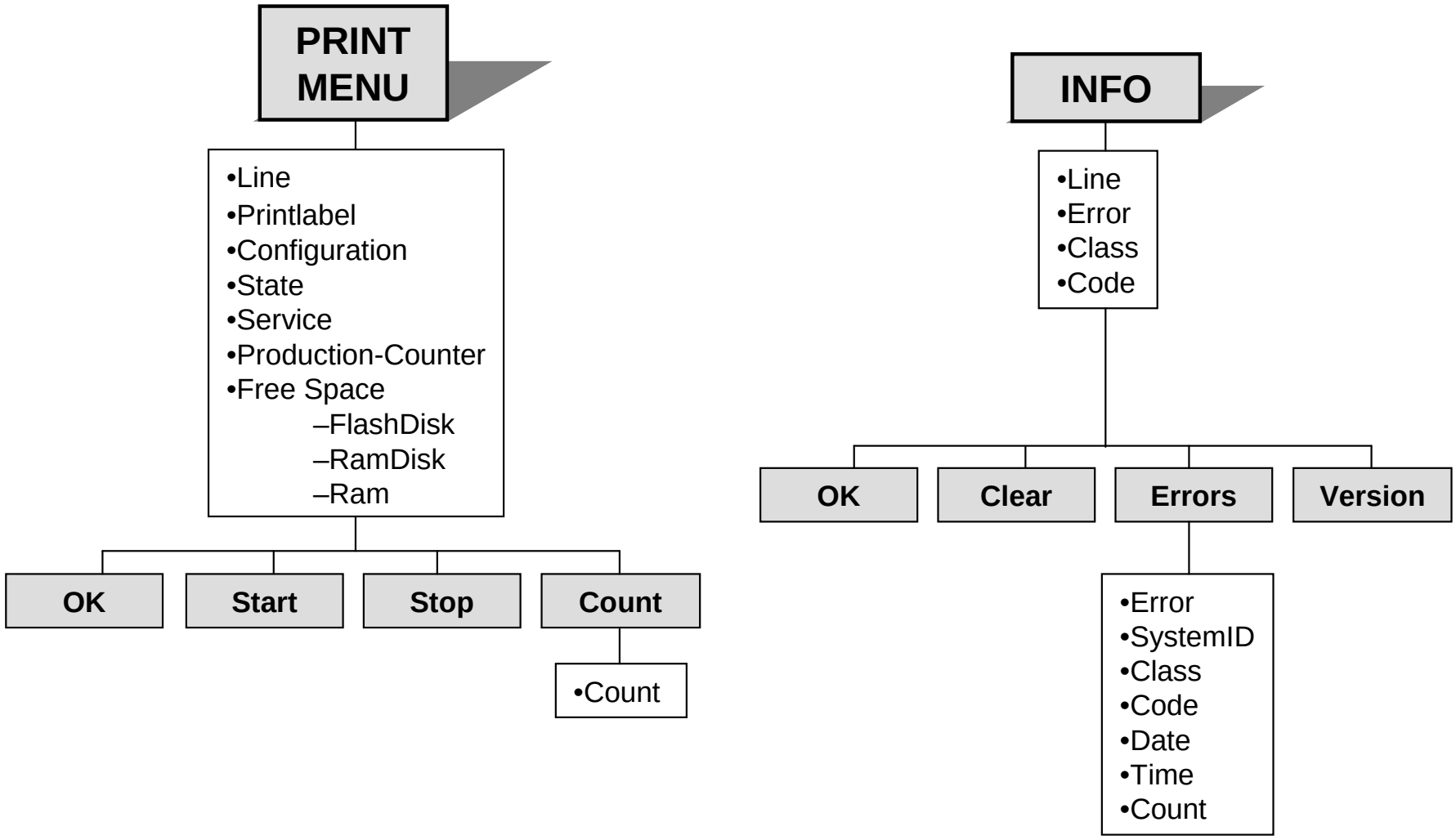
Modulation frequency [Hz]: 87719						
		2.5 mm character width (M7x5)		2.0 mm character width (M7x5)		
Mode	Drops	Vmax (m/sec)	Vmax (m/min)	Vmax (m/sec)	Vmax (m/min)	**Max. print frequency**
1g	25	1.46	87.72	1.17	70.18	3508
1HS	15	2.44	146.20	1.95	116.96	5847
1HS7	10	3.65	219.30	2.92	175.44	8772
1HS5	7	5.22	313.28	4.18	250.63	12531
2g	51	0.72	43.00	0.57	34.40	1719
2HS	31	1.18	70.74	0.94	56.59	2829
2HS14	19	1.92	115.42	1.54	92.34	4617
3g	79	0.46	27.76	0.37	22.21	1110
3HS	47	0.78	46.66	0.62	37.33	1866
4g	95	0.38	23.08	0.31	18.47	923
4HS	71	0.51	30.89	0.41	24.71	1235
5g	122	0.30	17.98	0.24	14.38	719
6g	162	0.23	13.54	0.18	10.83	541
1 UHS	9	4.06	243.66	3.25	194.93	9746
2 UHS	25	1.46	87.72	1.17	70.18	3508

The following printing speeds are possible for a machine with a **70 µm nozzle**:

Modulation frequency [Hz]: 65146						
		2.5 mm character width (M7x5)		2.0 mm character width (M7x5)		
Mode	Drops	Vmax (m/sec)	Vmax (m/min)	Vmax (m/sec)	Vmax (m/min)	**Max. print frequency**
1g	25	1.09	65.15	0.87	52.12	2605
1HS	15	1.81	108.58	1.45	86.86	4343
1HS7	10	2.71	162.87	2.17	130.29	6515
1HS5	7	3.88	232.66	3.10	186.13	9307
2g	51	0.53	31.93	0.43	25.55	1277
2HS	31	0.88	52.54	0.70	42.03	2101
2HS14	19	1.43	85.72	1.14	68.57	3429
3g	79	0.34	20.62	0.27	16.49	825
3HS	47	0.58	34.65	0.46	27.72	1386
4g	95	0.29	17.14	0.23	13.71	685
4HS	71	0.38	22.94	0.31	18.35	917
5g	122	0.22	13.35	0.18	10.68	533
6g	162	0.17	10.05	0.13	8.04	402
1 UHS	9	3.02	180.96	2.41	144.77	7238
2 UHS	17	1,60	95,8	1,28	76,64	3832

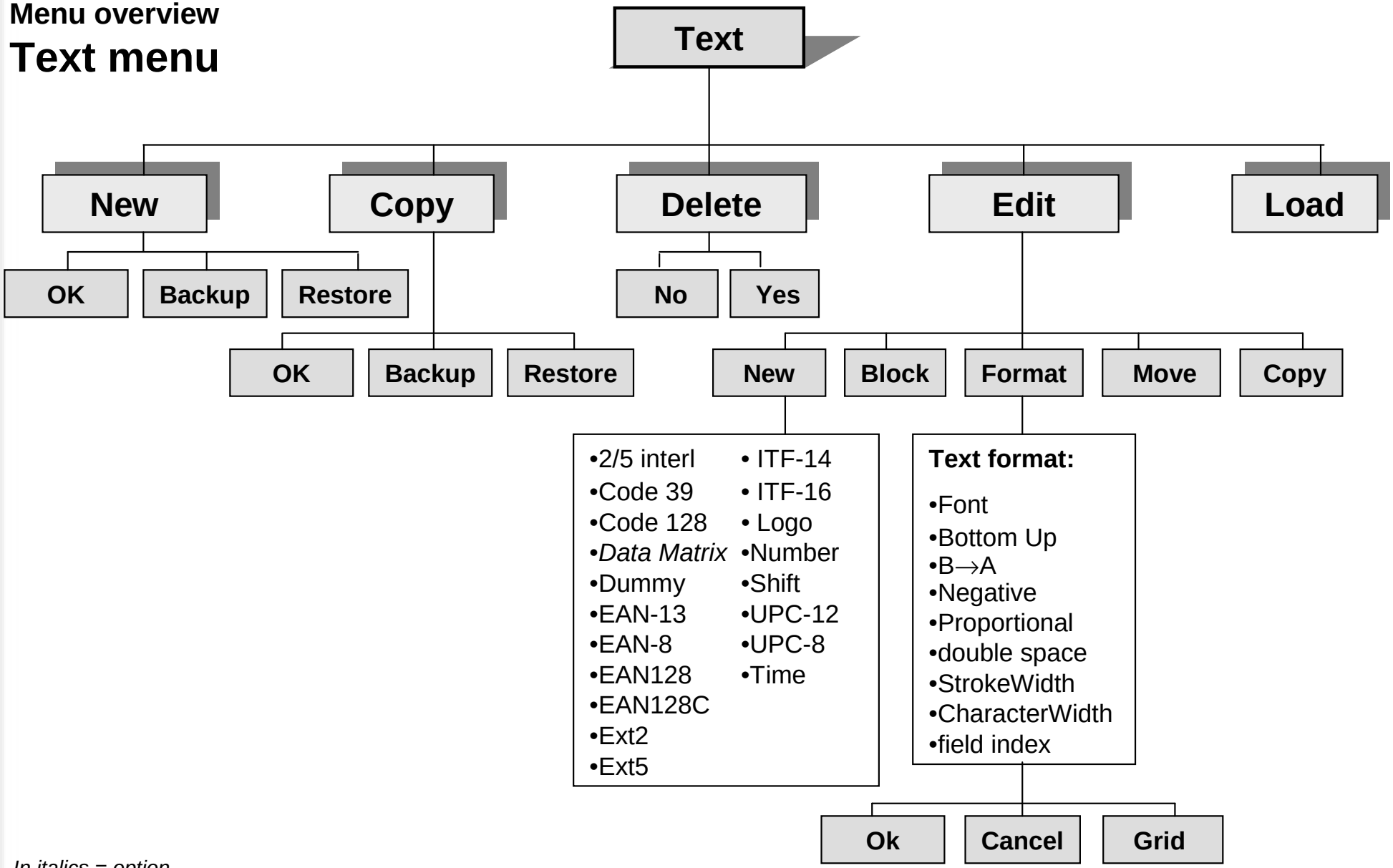
Menu overview: special keys

Print menu / Info key



Menu overview

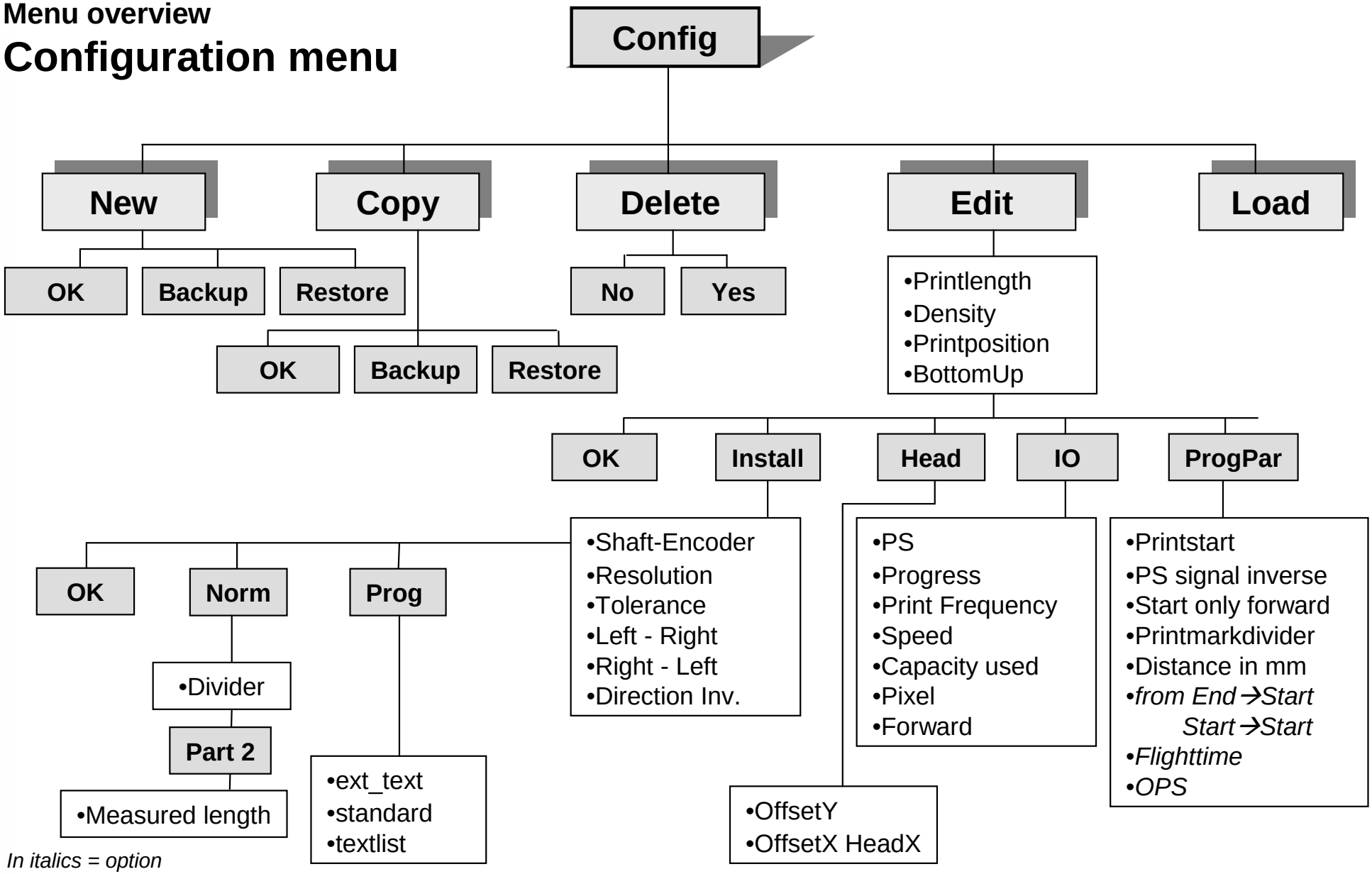
Text menu



In italics = option

Menu overview

Configuration menu



In italics = option

Menu overview

Service menu

Service

- Inksystem
- Head X

Funct.

- Press.-Pump
- Suctionpump
- Ink
- Ready
- Purge
- Bleed
- StabTest
- Clean Noz.

Special

- Add ink
- Add solvent
- First Fill
- Empty system
- Thicken ink
- Wash system
- Empty head
- Wash head

Status

Status Inksystem
- Press.
- Temp
- Visco
- Inklevel
- Filltime
- Ink-Watch
- Visco top
- Visco bottom
- Solvent empty
- Add ink
- Add Solvent

Status Head X
- Inkflow
- HV [V]
- Ink
- Bleed
- Head open
- Suctionpump

Phasing

- Head
- Modulation
- Phase
- Bar 1:
  Point of changing charge value
- Bar 2:
  Separation of the drops

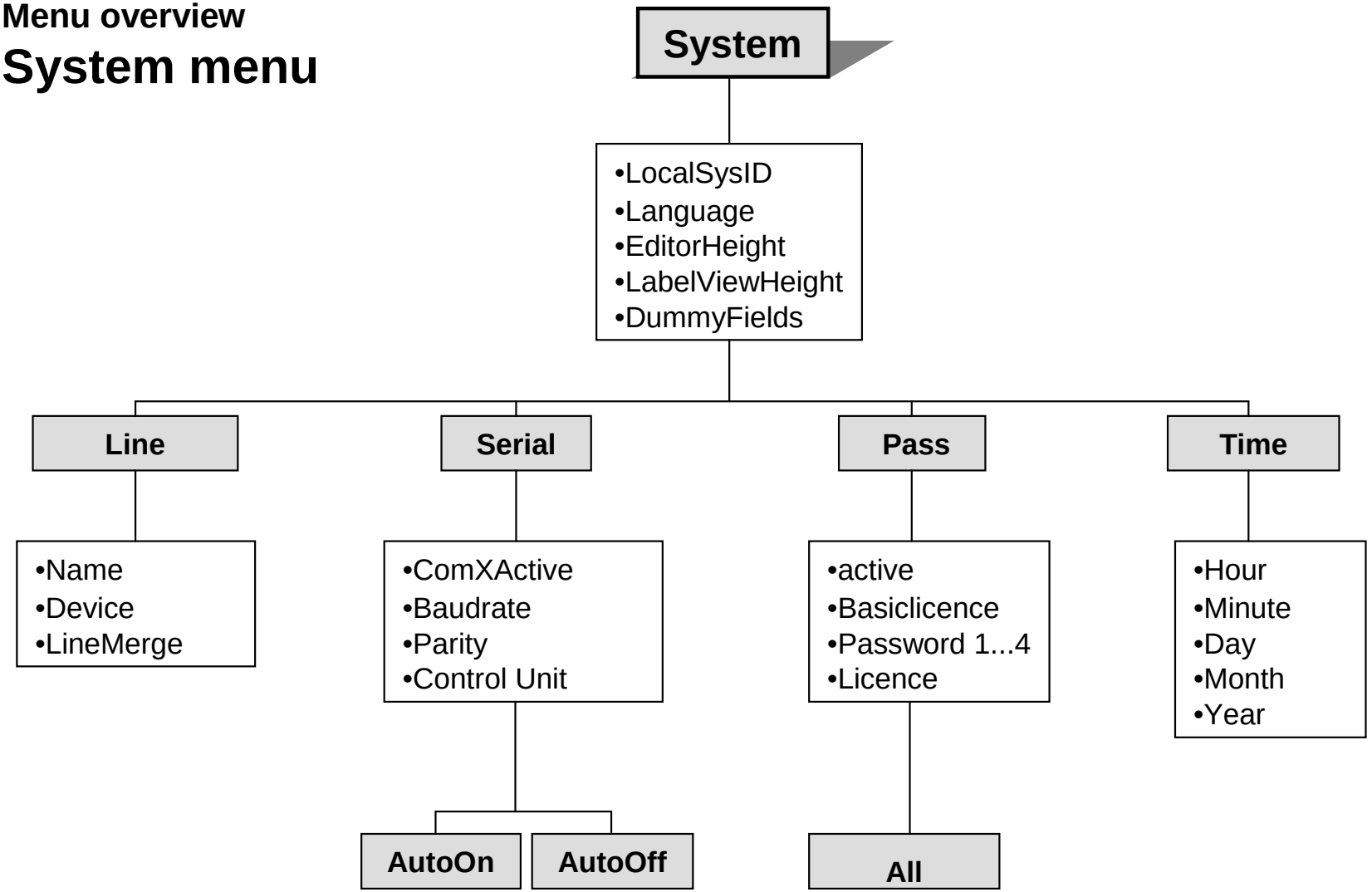
AutoMod

Setup

- Printmode
- HV [%]
- Modulation
- IFlowWatch OFF
- Mod-Frequency
- Pressure
- Visco-Offset
- HVMin
- HVMax
- Suctionpump
- InkType
- Nozzle Size
- Heads Line1
- Heads Line2

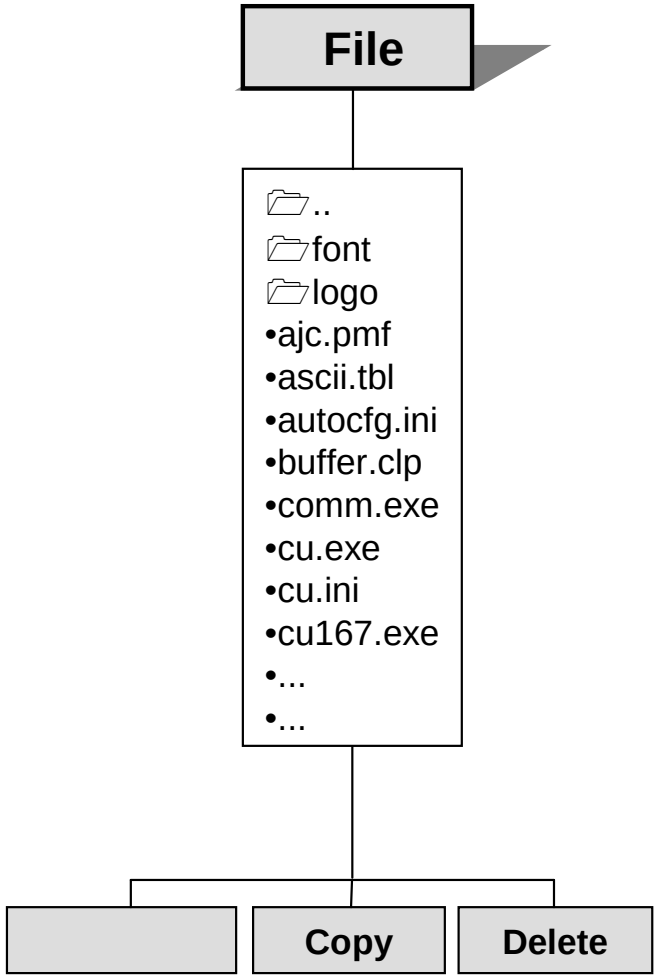
Menu overview

System menu



Menu overview

File menu



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alphaJET C - Commissioning and Maintenance

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Commissioning and maintenance

Maintenance

Regular maintenance work:

☑ **Daily:**
Check both storage containers
Clean the head

☑ **Weekly:**
Clean the machine
Clean and - if necessary - replace the air mat

☑ **½-yearly or after 1,500 – 2,000 operating hours**
Change the main filter
Change the ink return filter(s)
Carry out an ink exchange

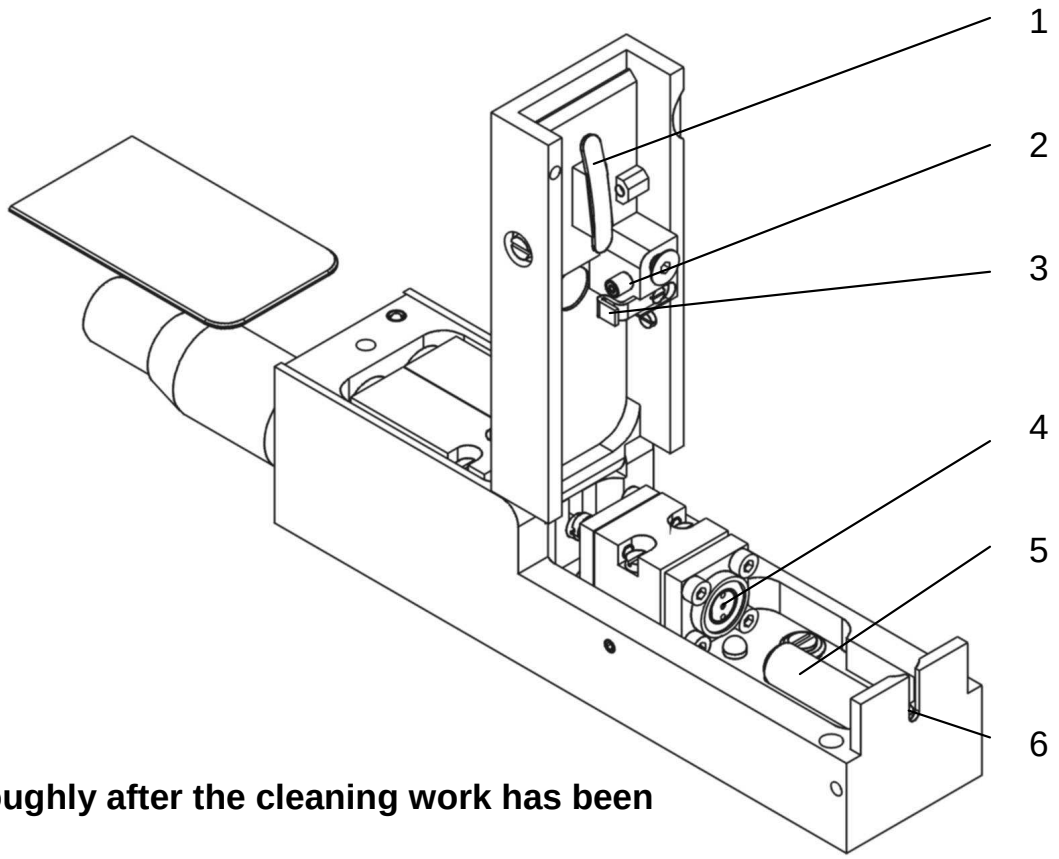
☑ **Yearly:**
Replace the air filter

Commissioning and maintenance

Cleaning the print-head

Clean the following components:

1 Upper deflection unit
2 Detection electrode
3 Charge electrode
4 Nozzle
5 Lower deflection electrode
6 Gutter



Ensure that the print-head is dried thoroughly after the cleaning work has been carried out!

Do not clean the nozzle prior to switching off, so that it then will be blocked by an ink drop!

Commissioning and maintenance

Rinsing the gutter

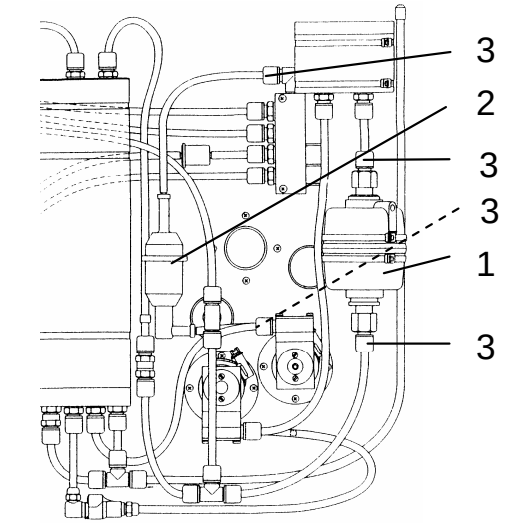
1 Cleaning bottle
2 Gutter

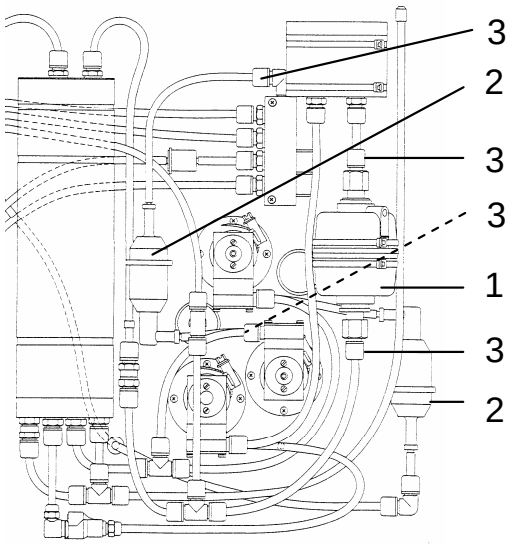
Commissioning and maintenance

Filter exchange

Exchange the main ink filter as well as the return filter after 1,500 to 2,000 operating hours respectively every ½ year - or after emptying the inking system!

- ➔ Check the ink pressure prior to exchanging the filter.
- ➔ You must always ensure that the ink pressure has been deflated before you interfere with the inking system. Wait for at least 15 min. (after switching of the ***alphaJET***) before dismantling a component from a part of the inking system that was under pressure.
- ➔ Separate the main filter by undoing the spigot nuts (3) on both of the screw connections on the connecting tubes. Use absorbent paper to remove any ink remains that still remain in the filter. The fitting of the new filter component is carried out by carefully placing the end of the tube in the screw connector and tightening up the the spigot nuts (3) afterwards. Use new cable ties to fix the filter in place.
- ➔ Return filters can be removed after pulling the end of the tubes out of the tube spouts.
  The fitting of the new filter is carried out analogous to the removal of the old one.





1 Main filter
2 Return filter
3 Spigot nut

Commissioning and maintenance

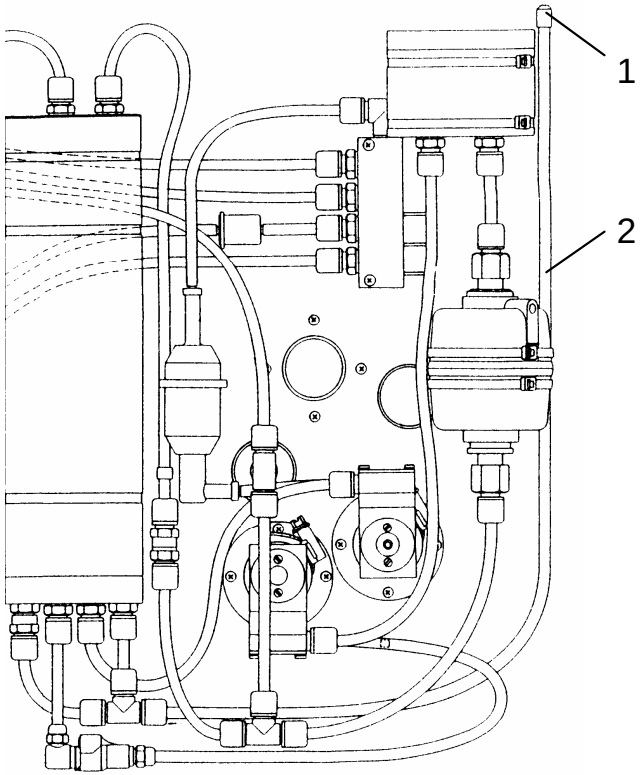
Ink exchange

Empty the system (drain off the ink)

- ☑ Switch off the machine
- ☑ Take the draining tube (2)
- ☑ Carefully remove the closing plug (1) and feed the open end into an empty bottle (at least 1 litre).
- ☑ Start the machine in SERVICE-mode and then use the **Empty system** command in the service-menu.
- ☑ Re-fit the closing plug to the draining tube.

Filling the system (First Fill)

- ☑ Fill the ink-bottle with ink (approx. 0.5 litre)
- ☑ Close the gutter using the gutter plug
- ☑ Start the machine in service-mode
- ☑ Select the **First Fill** command in the service-menu. The filling process starts automatically and stops after approx. 20 minutes. In order to remove any air remaining in the system, operate the print-head for approx. 15 minutes using the **Bleed** service function.



1 Closing plug
2 Draining tube

Commissioning and maintenance

Switching off for a longer period of time

1. Shutdown time > 4 days:

- Rinse the gutter thoroughly.
- Use the seals provided with the machine to close the gutter and the nozzle.
- Store the machine in an upright position in a cool and dry location.

Re-commissioning:
No special measures required.

2. Shutdown time > 14 days (pigmented inks only with *alphaJET* disconnected from the mains):

- Whilst the machine is switched off, the ink that remains internally in the viscosimeter will be fed out through the outlet tube.
- Afterwards the viscosimeter must be filled with solvent. Put approximately 20 ml of solvent (by using a plastic pipette bottle) into the outlet tube.

Re-commissioning:
No special measures required.

Please note: If the *alphaJET* (for pigmented inks) remains connected to the mains, do not fill the viscosimeter with solvent as the automatic start-up process is active! (If there was a disconnection from the mains, please switch the machine on and off, so that the automatic start-up process works properly.)

3. Shutdown time > 4 months (all inks):

- In this case we recommend that the inking system is emptied by using the relevant command in the service-menu.
- Afterwards fill up with solvent (“First fill”).

Re-commissioning:
The solvent remaining internally in the inking system is drained using the “Empty system” command. Afterwards it must be re-filled with ink again (“First fill”).

Commissioning and maintenance

Transport

Before an ***alphaJET-C*** is transported, always ensure that the machine has been prepared in accordance with the transport conditions :

When you are sure that the ***alphaJET-C*** will be placed in an upright position during the transport, only the following tasks have to be carried out:

- ☑ Empty the ink-bottle and close it with an air-tight lid.
- ☑ Empty the solvent bottle.
- ☑ Close the suction tube with a plug.
- ☑ Close the gutter with the gutter plug.
- ☑ Close the nozzle with the nozzle plug.

If upright transport cannot be guaranteed, then do the following in addition to the above:

- ☑ Empty the inking system.

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alphaJET C - Troubleshooting

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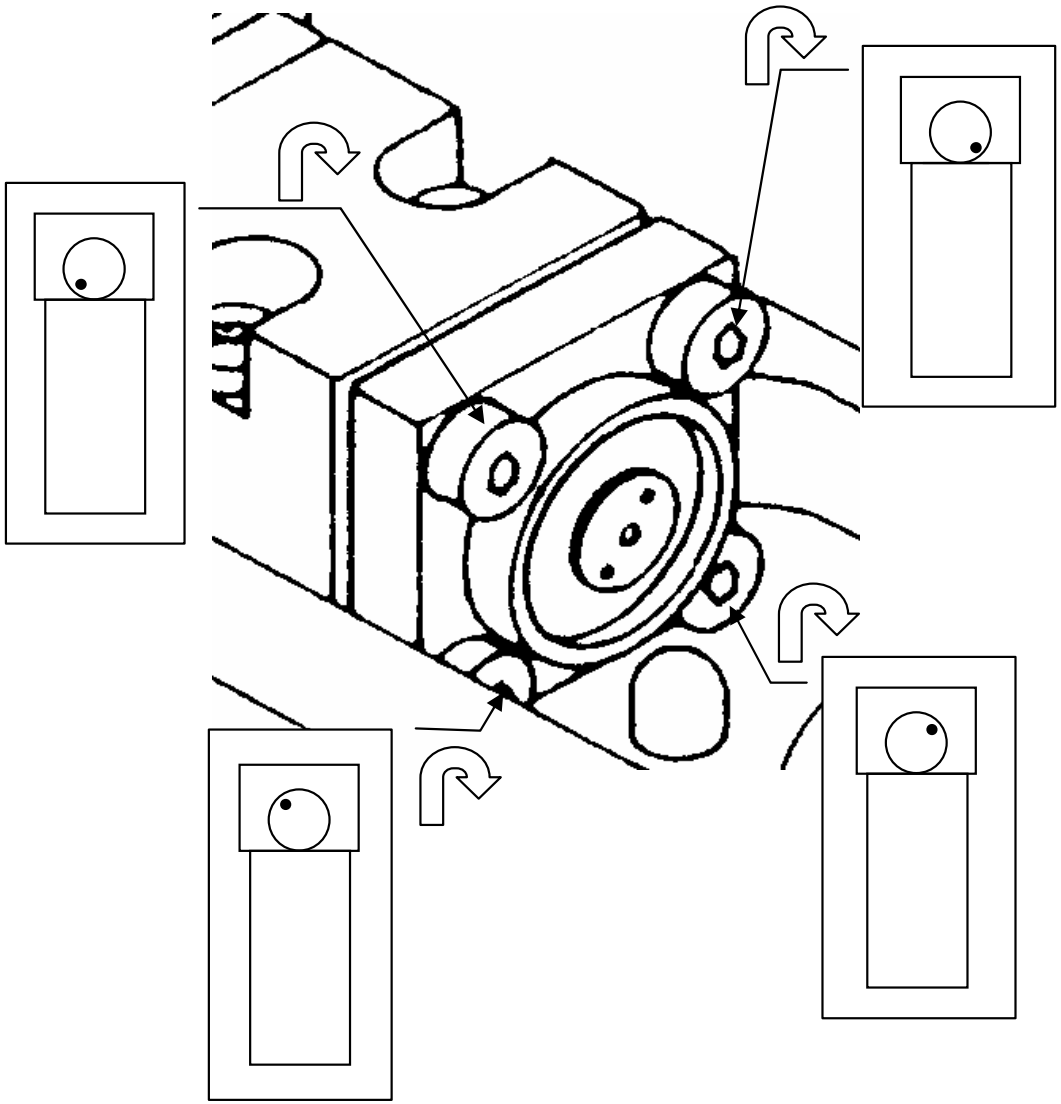
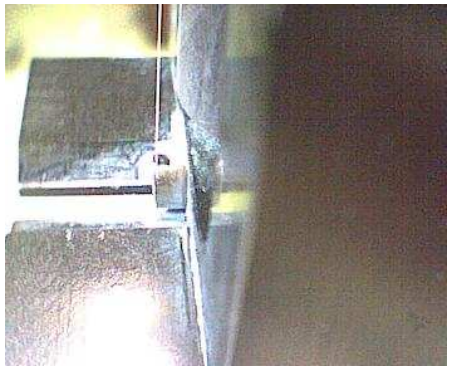
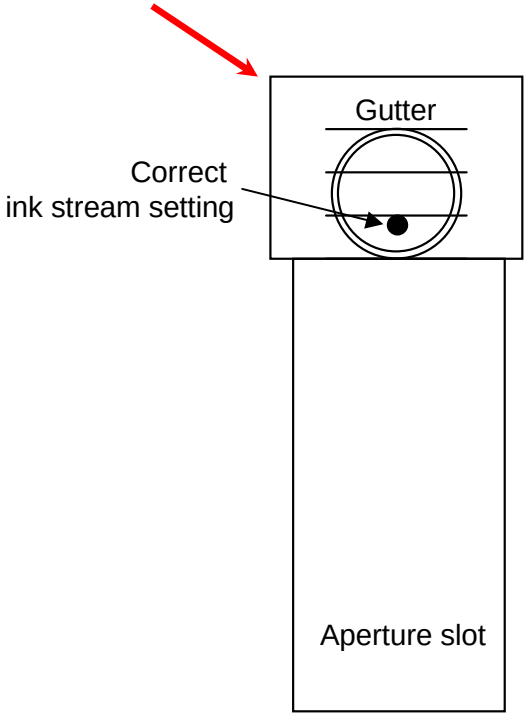
Troubleshooting

Adjusting the ink stream







Troubleshooting

Self-diagnostics after being switched on

After being switched on, the alphaJET will start a self-test, which will check the following sectors among other things:

- Operating voltage: 24 V, ±12 V
- Special printer voltages: modulation, charging
- Test: module, RAM, clock and bus inter-communications

After this test has been completed, the alphaJET will go to the print-ready state. The following sectors will be tested prior to this:

- Function of the pressure and suction pumps
- Ink pressure, ink sensors
- Ink flow
- Optimum phasing
- High voltage for deflection field

Troubleshooting: Diagnostics and system reports

Error codes - control unit section

No.	Description	Cause	Elimination
001	Event-Manager started	Is always registered upon start of the system.	———
100	PU–Reset	Main board controller defective.	• Replace the main board.
101	Encoder Detection Error	The encoder supplies clock pulses to phase B only	• Replace the encoder.
102	Communication Error **UPIF**	Incorrect transmission between the control unit and printing unit.	• Check the plug connections. • Check and, if necessary, replace the control unit or the headboard, if necessary the main board.
103	Format File Error	The configuration to be loaded is no longer available.	• Load a different configuration and check the values.
104	Label File Error	The text to be loaded is not available.	• Load a different text. When using the “ExtText” print program • Check the connected inputs for text selection as well as the reference list (Text-Load).
105	Fonts/logos loaded in part only	Too many fonts and logos have been stored or logo/font files are defective.	• Delete all unnecessary logos. • Delete logo/font files.
106	Print buffer in a too small	Print label exceeds print storage.	• Redesign (reduce) print image. • Change storage configuration (in file **sbsize.ini**).
107	UPIF/Serial transmission error	The serial transmission between control and printing unit.	• Check plug connectors. • Check and, if necessary, replace the control unit or the headboard, if necessary the main board.
108	UPIF/DMA transmission error	The print data transmission between control and printing unit is disturbed.	• Check plug connectors. • Check and, if necessary, replace the control unit or the headboard, if necessary the main board.
109	File transfer error	An error has occurred during transmission of data via the serial interface.	• Check the connection cable . • Compare the settings of the serial interface for receiver and transmitter.
110	MPL-Program failed to be loaded	The MPL-Program to be loaded is not available.	• Load a different MPL-Program and check the values.
112	MPL-runtime error	The MPL print program selected is defective. The print controller is disabled.	• Load a different MPL print program. • Eliminate the program error from the MPL program and reload it.

Troubleshooting: Diagnostics and system reports

Error codes - control unit section

No.	Description	Cause	Elimination
113	Communication Error: Unknown command	The command received is unknown.	• Electromagnetic disturbances. • Non-Compatible program versions.
114	Loading error: System setting	An initialization file for the system configuration is defective or missing.	• Check and, if necessary, correct all settings in the system configuration and restart.
115	Insufficient main memory	The available main memory is insufficient.	• Check the memory setting. Switch AJC off and on again.
116	No RAM-Disk	No RAM-Disk was found.	• Wrong CU version (PC version on AJC or AJC version on PC). • RAM-Disk (CU167) defective.
117	Insufficient unassigned RAM-Disk-memory	There are too many files on the RAM-Disk.	• Delete files (texts, configurations). • RAM-Disk (CU167) defective.
118	Loading error: specific printer parameter	Configuration file (specific printer parameters) defective or missing.	• Check and, if necessary, correct all settings in the service field.
120	Not compatible terminal version	Terminal (PC) software and printer software are incompatible with each other.	• Update the software.
121	Unknown MPL command	MPL version and printer software incompatible with each other or MPL program defective.	• Update the software. • Correct the MPL-program .
600	Print stop	No longer ready for printing.	• Re-establish readiness for printing.
601	Auto stop	The counter of the Auto stop function has elapsed.	• Reactivate or deactivate the counter function.
602	Print during printing	Printing is triggered during a printing process.	• Check of the application (Product sensor signal).

Troubleshooting: Diagnostics and system reports

Error codes - printer section

No.	Description	Cause	Elimination
200	"Ink tank empty""	Ink level below a value of 50.	• Refill the ink bottle . • Check the ink adding valve (V4).
201	"Solvent empty"	Solvent bottle empty.	• Refill the solvent bottle. • Check the solvent adding valve (V3).
202	"Viscosity Warning\+\–50"	Fill time deviation at least 5 seconds.	• No error, if the ink has been replaced only a short time before. • Check the solvent adding valve (V3).
203	Ink pressure out of range	Ink pressure too high / too low by at least 12%.	• Check the pressure pump (P1). • Check the sieve (positioned before P1). • Check the pressure sensor and the cable.
204	RTC Warning	Communication with the real-time clock defective (applicable to pigmented ink only).	• Hardware error . • Call the customer service.
205	"Data lost"	Mirrored system data and parameters stored in the printing unit are lost. This error occurs whenever the controller MC167 on the main board has been replaced.	• Check all parameters in the Service/Setup window and readjust them. • Call the customer service.
206	"Communication Warning\UPIF\PFO;Error Data"	Serial communication between the control unit and the printing unit defective. Intense radiated interference.	• Check the UPIF cable (40 pins). • Call the customer service if this error occurs repeatedly.
207	"Timeout: Filltime"	Upper viscosity electrode without ink for at least 10 minutes. Mixtank overfilled. Flow restrictor D1 blocked. Electrode not connected.	• Let a little ink flow out. • Check the flow restrictor. • Check the ink electrodes.
208	"Ink tank full \ error"	The ink level has reached the upper ink electrode. Valve V3 or V4 defective.	• Check all of the ink electrode connections. • Check valve V3, V4.
209	"Viscosity out of range"	Filltime deviation at least 12 seconds. "Add solvent" warning has been neglected; V3 defective.	• Add solvent. • Check V3.

Troubleshooting: Diagnostics and system reports

Error codes - printer section

No.	Description	Cause	Elimination
210	"Fan Error\MEK"	Cooling air blower for solvent defective or too slow.	• Check the cable. • If necessary, replace the blower.
211	"Fan Error\AJ"	Main cooling air blower defective or too slow.	• Check the cable. • If necessary, replace the blower.
212	"MEK power failure"	Supply voltage applied to the solvent recovery unit defective.	• Check the connector or replace the unit.
213	"Temperature sensor error"	Ink temperature sensor defective or not connected.	• Check the sensor and the cable, or replace the sensor.
214	"Overpressure switch !"	Ink pressure protective switch released. Ink filter clogged. Flow restrictor D3 blocked.	• Replace the ink filter. • Clean / replace D3.
215	"Pressure sensor error"	No pressure sensor detected.	• Check the sensor and the cable.
216	"Supply Voltage Error"	One of the operating voltages (+12 VDC, –12 VDC, +24 VDC, solvent recovery unit) is incorrect.	• Check the fuse F3. • Call the customer service.
218	"Debit pressure not attainable"	Ink level in the mixtank too low; sieve before the pressure pump clogged. Pressure pump defective.	• Check the ink level; clean the sieve; check the pressure pump, if necessary, replace it.
219	Pressure pump defective	**Autodiagnosis:** pressure pump or main board defective	• Check and if necessary, replace the pressure pump. • Call the customer service.
220	Suction pump defective	**Autodiagnosis:** suction pump error.	• Check and if necessary, replace the suction pump. • Call the customer service.
221	MC / FPGA Transmission error	**Autodiagnosis:** error in transmission between main board and FPGA.	• Check the ribbon cable connection between main board and head board. • Call the customer service.
222	DSP transmission error	**Autodiagnosis:** error in transmission between main board and DSP.	• Check the ribbon cable connection between main board and head board. • Call the customer service .
223	Headboard Configuration	The configured head board failed to be detected.	• Check the configuration (Service→Setup) • Call the customer service

Troubleshooting: Diagnostics and system reports

Error codes - printer section

No.	Description	Cause	Elimination
224	Suction pump supply defective	Main board electronics for suction pump(s) defective.	• Check the fuses F5, F6, F7, F9. • Call the customer service.
250	"ENC-Frequency too high”	Encoder frequency exceeded maximum value. Belt conveyor running too quickly, or encoder defective.	• Check the speed of the belt conveyor. • Check the encoder.
251	"Automatic phasing not possible”	Incorrect modulation voltage. Ink too old. Wrong or missing drop build-up. Charge detect signal too weak (charge detector board).	• Check the modulation voltage. • Check / clean the charge detect sensor. • Check the charge detect signal. • Replace the ink. • Replace the load detector board or the head board.
252	"Error Modulation Voltage”	Incorrect modulation voltage.	• Replace the head board.
253	"Charge Voltage error”	Charging voltage incorrect.	• Replace the head board.
254	DSP / FPGA transmission error	Error in transmission from DSP to FPGA (head board)	• Replace the head board.
255	UPIF transmission error (PU)	Data transmission between control unit and DSP defective.	• Check the ribbon cable connection between control unit and head board. • Call the customer service.
258	"HV value out of range”	High voltage too low. Value for HVmax too high.	• Check the print head or dirt. • Check the HV cable and the electrode insulation.
259	"Error Deflection Field”	High-voltage flashover. Print head dirty. Value for HVmax too high.	• Clean the print head. • Check / reduce the HV value.
260	"Ink Flow missing”	Ink jet missed gutter; ink too old.	• Clean the nozzle. • Replace the ink.
262	"Head Board Error”	More print heads have been configured than are actually available.	• Check the settings in the Service / Setup window (in the supervisor mode).

Troubleshooting

Troubleshooting: tips

Determined problem	Possible reason	Repair
The voltage at the pressure pump is too high (> 8 volts). The audible rotation of the pump is too high (>2 rps). No or not enough ink pressure is built up.	1. The diaphragm inside the pressure pump is defective. 2. The valves inside the pressure pump are soiled. 3. The protection mesh in the supply tube is blocked. 4. The main filter is blocked. 5. The protection mesh in the pulsation absorber inlet or the restrictor D3 in the outlet are blocked.	1. Change the pump. 2. Clean the valves inside the pump / change the pump. 3. Change the supply tube of the pump. 4. Change the main filter. 5. Change or clean the mesh in the left connector / the restrictor in the right connector of the absorber.
The voltage at the pressure pump is too low (<5 volts). The ink pressure varies. The viscosity measuring possibly doesn´t work correctly (too long cycles).	1. The flow restrictor D2 is partly or totally blocked. 2. The ink is much too thick. (Solvent bottle empty or solvent add valve V3 defective.)	1. Renew flow restrictor D2 completely. 2. Refill solvent bottle / change valve V3.
No or an apparently wrong viscosity measuring though the pump rpm is normal.	The visco-measuring restrictor D1 is partly or totally blocked (e.g. after a longer shut down period).	Change visco-measuring restrictor D1.
Insufficient / varying suction at the gutter.	1. The ink return filter is soiled 2. The valves inside the suction pump are contaminated or defective.	1. Change ink return filter. 2. Change pump or clean / change valve plates.
Recovered solvent gets into the printhead. Restless position of the XX'es in the Phasing display. Frequent contamination of the printhead. Solvent is visible at the bottom of the air filter.	1. The machine was operated with horizontally orientated back panel. 2. The cooling element is defective. 3. An ink with very low viscosity has been filled into the system.	. Drain the air filter + 1. Assemble the back panel. 2. Replace the recovery unit. 3. Leave opened the lower bleed screw of the air filter until viscosity is normal
Visible interferences on the inkstream (pulsations coming from the pressure pump).	1. The protection mesh in the pulsation absorber inlet / the restrictor D3 in the pulsation absorber outlet is blocked. 2. The main filter is blocked.	1. Change / clean the mesh (left connector) or the restrictor D3 (right connector). 2. Change the main filter.
Viscosity never reaches value 0.	Solvent add Valve V3 doesn't close correctly. Permanent minimal solvent addition.	Change V3.
Varying ink pressure / pressure safety switch releases.	1. Blocked main filter F1. 2. Blocked restrictor D3. 3. Blocked protection mesh (absorber inlet).	1. Replace main filter. 2. Clean / replace restrictor. 3. Clean / replace protection mesh.

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alphaJET C - Spare part overview

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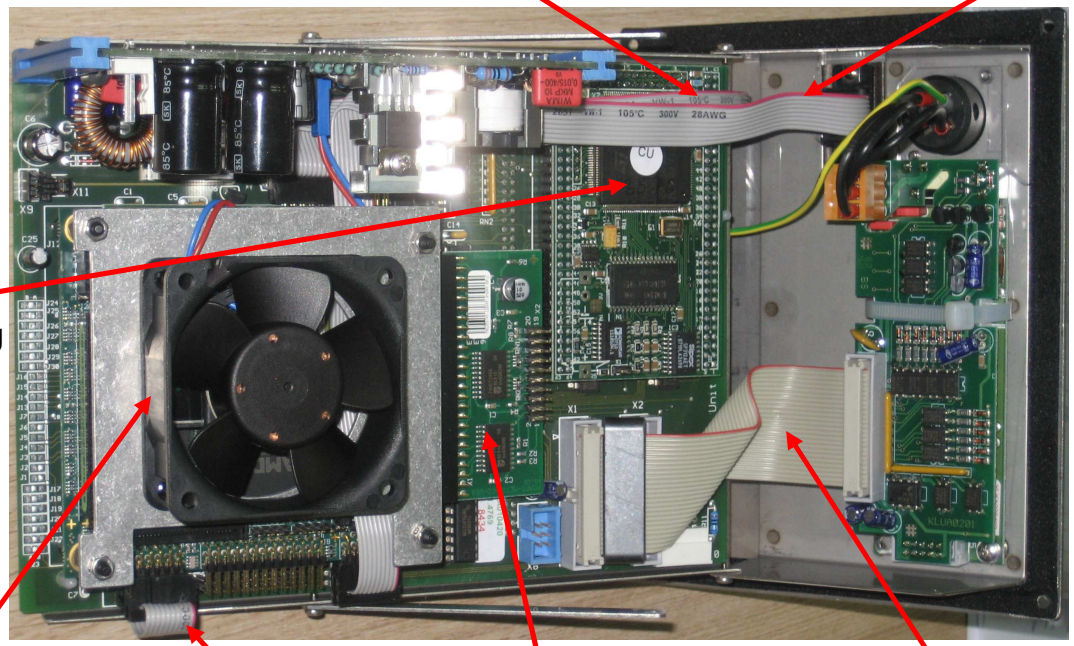
Spare part overview

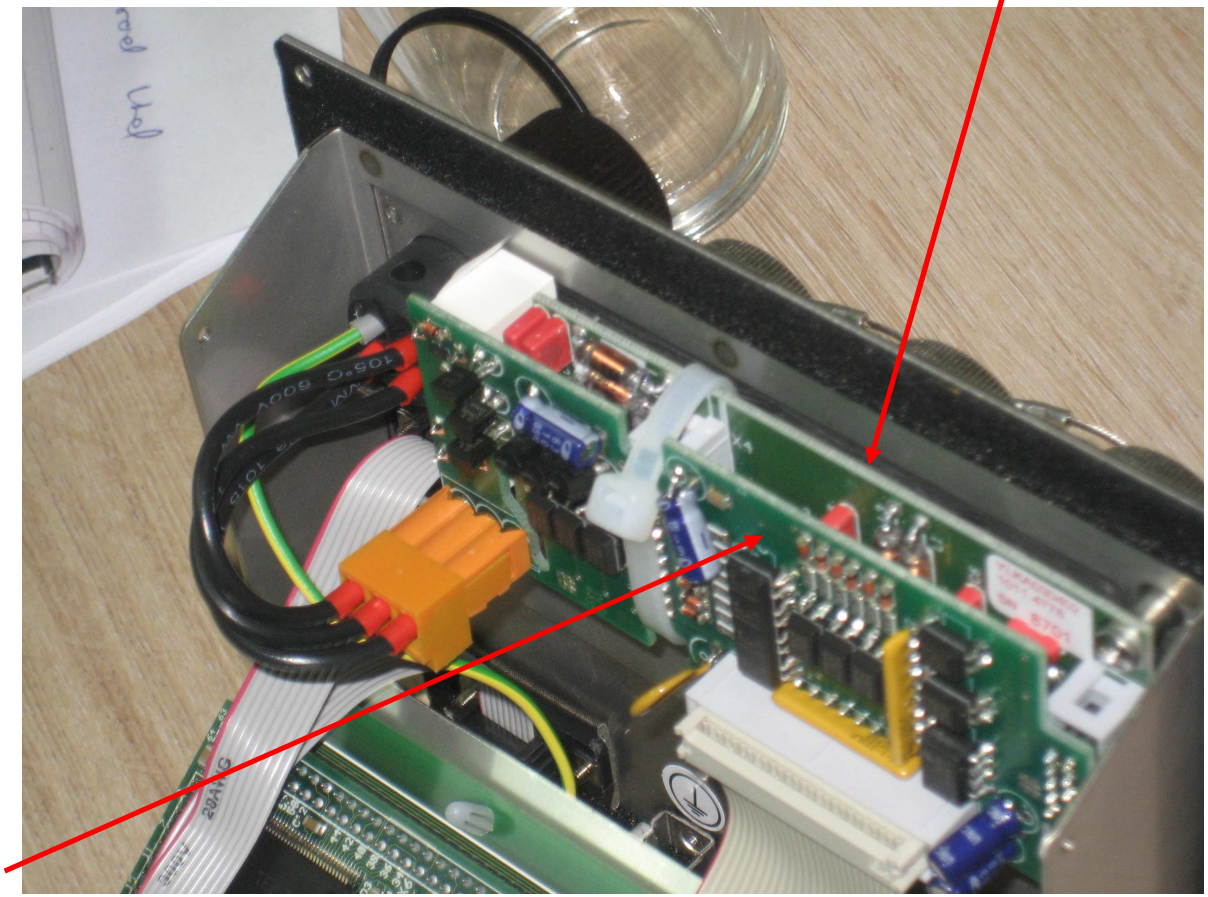
Control Unit



Spare part overview

Control Unit

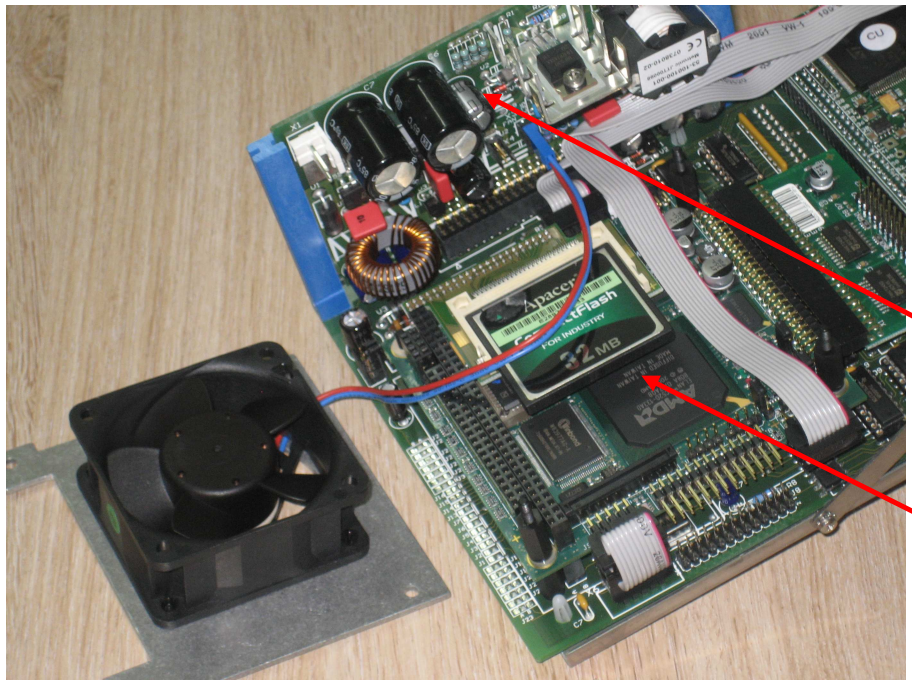
I/O Board B
(1011.4778)



I/O Board A
(1011.4773)

Spare part overview

Control Unit



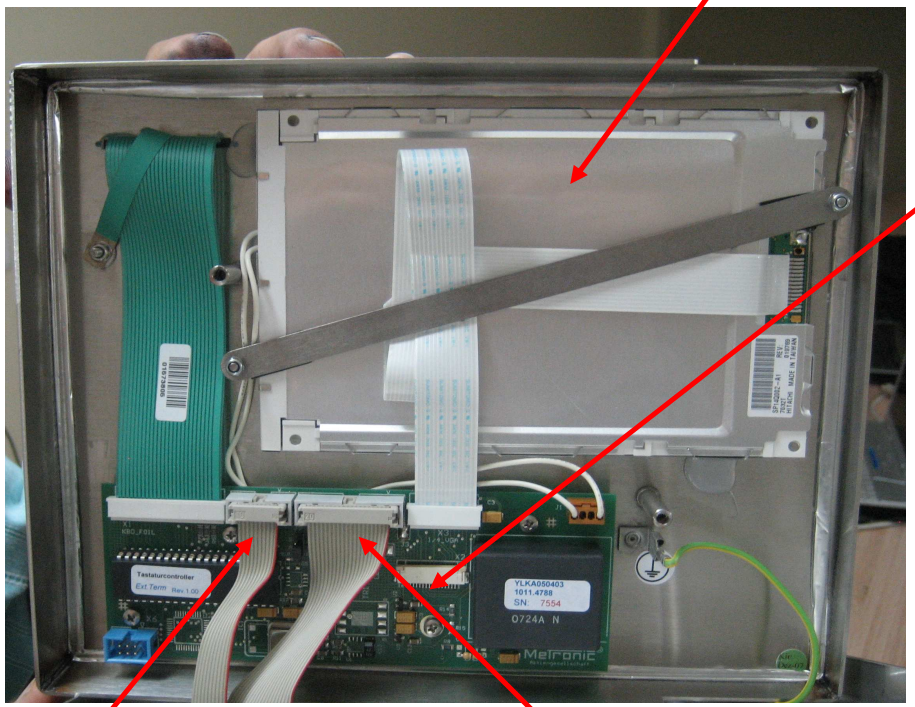
Main power supply
CU (1011.4782)

PC 104 with Flash
and LCD adapter
since AJC 5894
(1007.1292)

Spare part overview

Display

LCD display ¼ VGA (1007.1692)



Keyboard contoller since AJC 5894 (1011.4788)

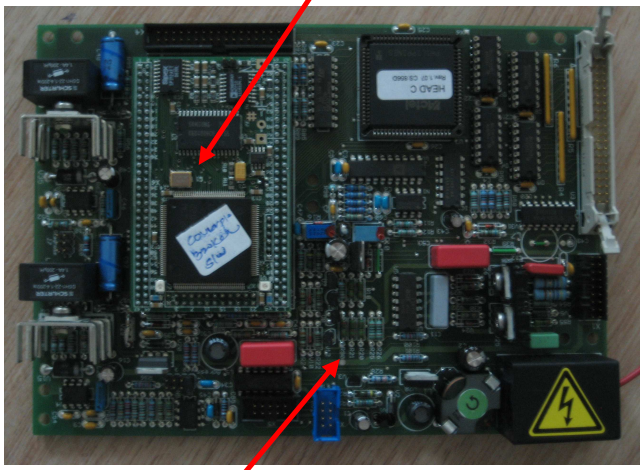
Ribbon cable keyboard controller to CU (1011.2985)

Ribon cable keyboard controller to LCD adapter (1011.3010)

Spare part overview

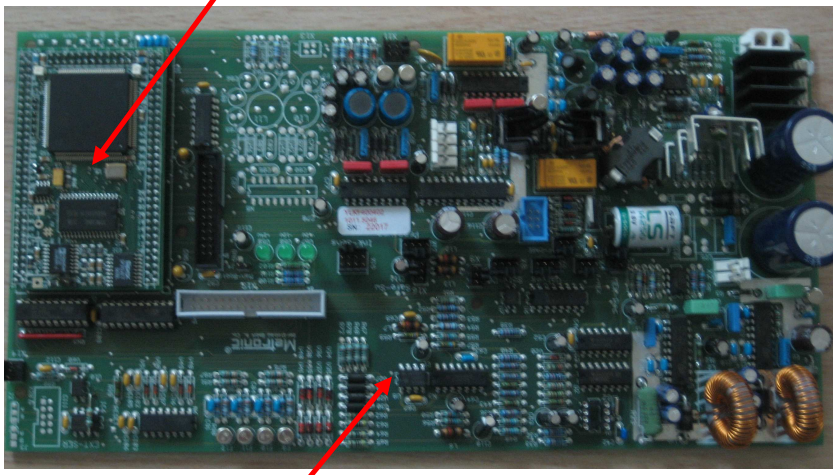
Headboard, main board and controller

Module 168 programmed for Headboard (1011.4792)



Headboard (1011.5056)

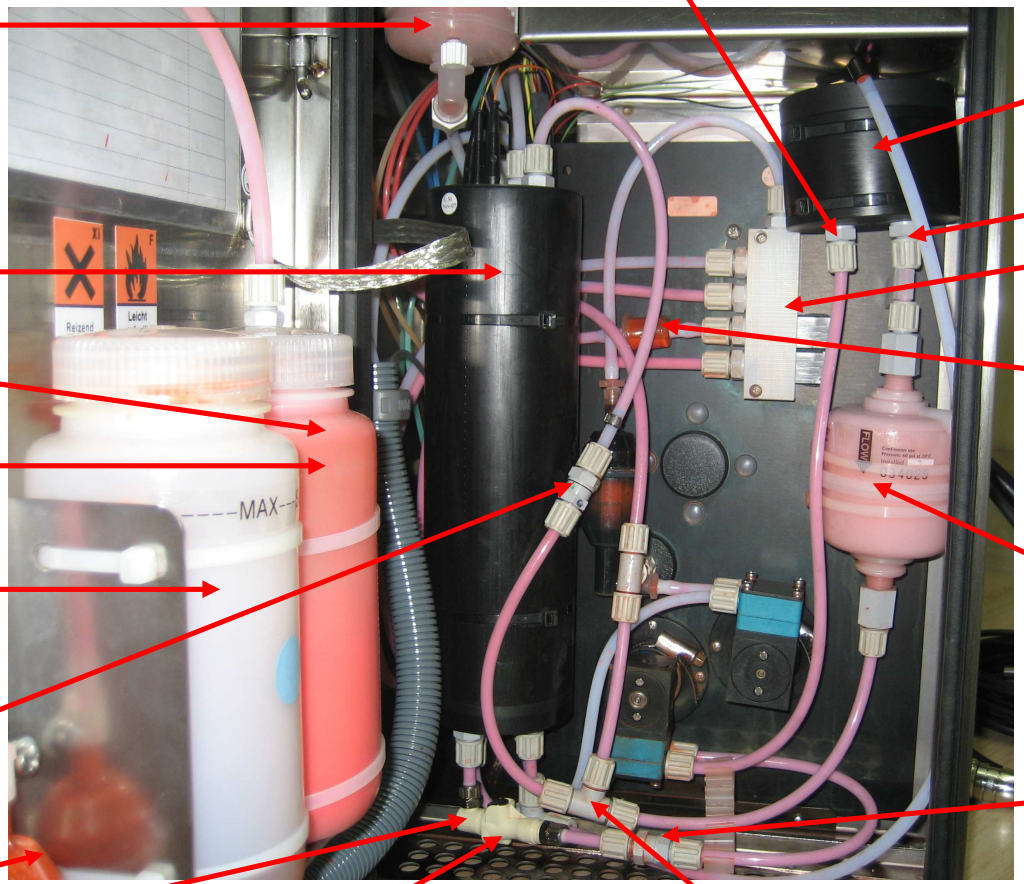
Module 168 programmed for Mainboard (1011.4793)



Mainboard (1011.5046)

Spare part overview

Ink system



Pneumatic mesh (1011.0426)

Airfilter (1010.3547)

Mixtank (1010.9327)

Inkbottle(1010.2233)

Inkbottle-pigmentet(1010.2234)

Solventbottle (1010.9340)

Flow restrictor (1010.6353)

Inkfilter (1010.3543)

90 °Coupling plug (1006.4907)

Coupling socket (1006.4905)

Union-Tee (1008.6961)

Protection mesh for diaphragm pressure pump (1010.8826)

Mainfilter (1010.3535)

Solventfilter (1010.3542)

Valve block comlete (1011.0183)

Pneumatic restrictor (1011.0427)

Pulsation absorber (1010.2579)

Spare part overview

Ink System

Magnet valve
(1008.6505)

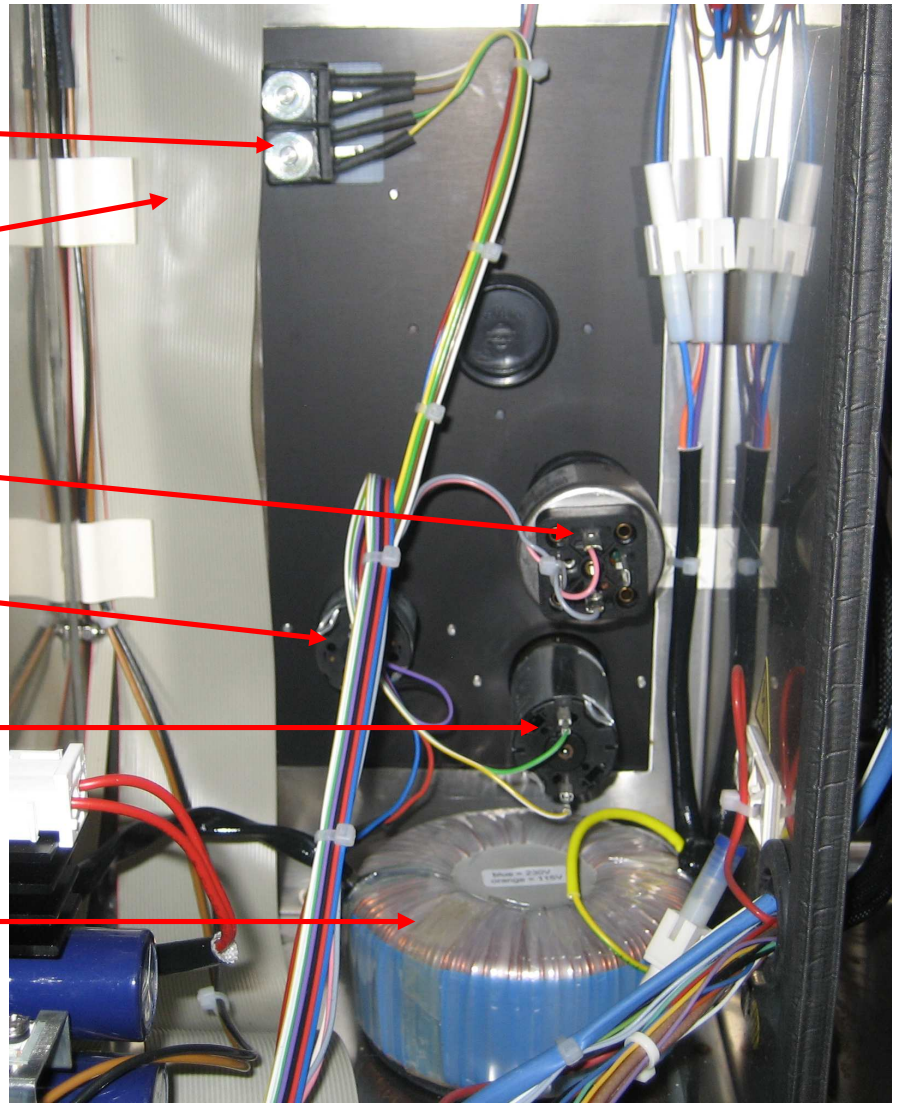
Ribbon cable head 1/2
and lines 1/2
(1011.3050) Head 1L2H
(1011.3051) Head 2

Pressure Sensor
(1007.5209)

Suction pump
(1000.9876)

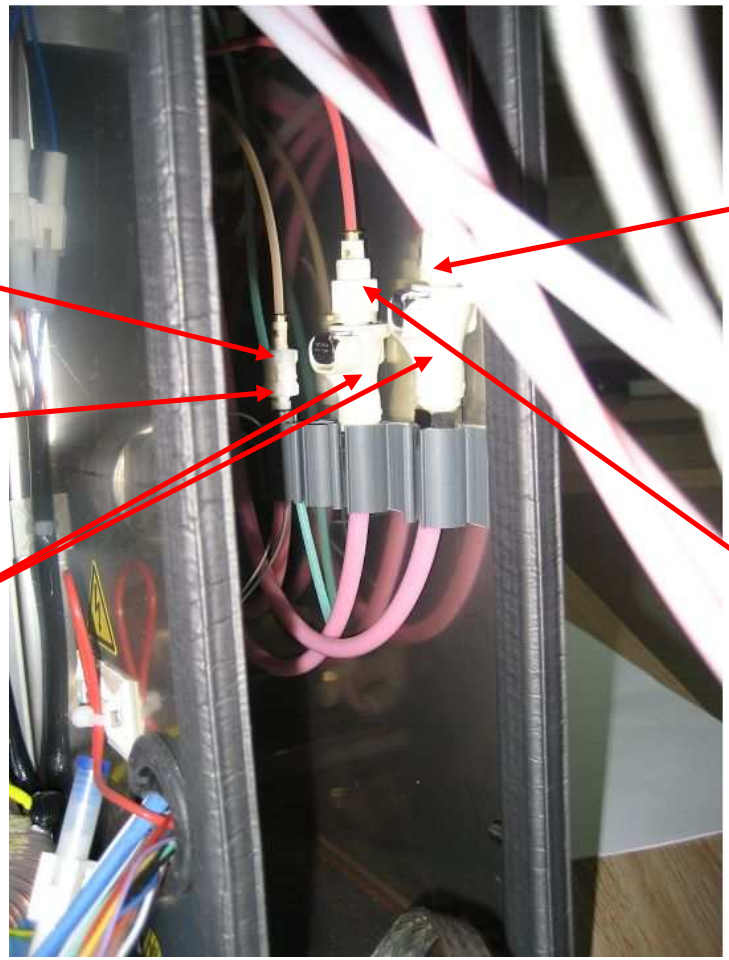
Pressure pump
(1000.9885)

Transformer
(1011.6463)



Spare part overview

Ink system - head tube connectors



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